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IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1965

No. ~~1965~~ 179

ATLAS SCRAPER AND ENGINEERING CO.,
a corporation, *Petitioner,*

vs.

HARRY A. PURSCHE, an individual, *Respondent*

APPENDIX TO PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT.

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APPENDIX

Second Opinion of the United States Court of Appeals for the Ninth Circuit

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

No. 19,904

ATLAS SCRAPER AND ENGINEERING CO., a corporation, *Appellant*,

vs.

HARRY A. PURSCHE, an individual, *Appellee*.

[February 28, 1966]

Appeal from the United States District Court for the Southern District of California Central Division

Before: BARNES, JERTBERG and KOELSCH, Circuit Judges.
KOELSCH, Circuit Judge.

This is the second appeal in these cases. Of course some considerable knowledge of the background and earlier disposition of the litigation is essential to an intelligent understanding of the present appeal. But rather than burden this opinion with a detailed statement, we refer the reader to the prior opinion [300 F.2d 467 (9th Cir. 1961), cert. denied 371 U.S. 911], which sets out in sufficient detail all such information.

Atlas will not be permitted to question the trial court's determination that it was guilty of unfair competition. That issue was one finally settled on the former appeal. Pertinent is the frequently quoted statement in *Himley* v. *Rose*, 9 U.S. 312, 313 (1809): "Nothing is before this court but what is subsequent to the mandate."

And we find no merit in Atlas' contention that the trial

court, in awarding Pursche damages for and an injunction against such competition went beyond the mandate.[1]

True, this court did not give express approval to the provisions in the judgment for such affirmative relief; but neither did it expressly disapprove them. The opinion, however, does contain an extensive discussion of unfair competition and, as already noted, shows this court upheld the trial court on that issue. Surely no one could argue with any degree of plausibility that so much attention would be devoted to a mere abstract matter. Nor is a practical reason difficult to discover, if what hinged upon the outcome is kept clearly in mind. Perhaps the opinion is terse, but there was no occasion to labor the obvious.

Nor did the trial court err in refusing to deny Pursche all relief on the ground that he, Pursche, had misused his own patents to violate the antitrust laws. This was a defense. But Atlas did not assert it until after the remittitur on the affirmance of the judgment.[2] At that stage such a motion was improper and, if granted, would have constituted a clear violation of that court's duty to carry out the mandate.

> "When a case has been once decided by this court on appeal, and remanded to the [lower] court, whatever was before this court, and disposed of by its decree, is considered as finally settled. The [lower] court is bound by the decree as the law of the case; and must carry it into execution, according to the mandate. That court cannot vary it, or examine it for any other purpose than execution; or give any other or further re-

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[1] The opinion forms a part of the mandate. H.P. Coffee Co. v. Reid, Murdoch & Co., 60 F.2d 387 (8th Cir. 1932).

[2] By its motion Atlas sought to assert that the "grant back" provision contained in the Pursche-Atlas agreement (which obligated Atlas to assign to Pursche all improvements for two way plows conceived and acquired by Atlas and which the trial court determined applied to the Chandler Patents) would operate to give Pursche a monopoly outside the scope of his own patents and, hence, was unenforceable and void under such decisions as Mercoid Corp. v. Mid-Continent Co., 320 U.S. 661 (1944) and Morton Salt Co. v. Suppinger, 314 U.S. 488 (1942); see also Transparent-Wrap Machine Corp. v. Stokes & Smith Co., 329 U.S. 637 (1947).

> lief; or review it, even for apparent error, upon any matter decided on appeal; or intermeddle with it, further than to settle so much as has been remanded."

Sanford Fork & Tool Co., 160 U.S. 247, 255 (1895).

Further, the trial court did not err in modifying the earlier decree which enjoined Atlas from unfair competition. That a court of equity possesses inherent power to adapt an injunction to meet the needs of a new day is settled, for the Supreme Court has declared that:

> "A continuing decree of injunction directed to events to come is subject always to adaptation as events may shape the need. (citation omitted). The distinction is between restraints that give protection to rights fully accrued upon facts so nearly permanent as to be substantially impervious to change, and those that involve the supervision of changing conduct or conditions and are thus provisional and tentative."

United States v. *Swift & Co.*, 286 U.S. 106 (1932); *Food Fair Stores* v. *Food Fair*, 177 F.2d 177 (1st Cir. 1949); *Armstrong* v. *De Forest Radio Tel & Tel Co.*, 10 F.2d 727 (2d Cir. 1926). The supplemental injunction, like its predecessor, was confined to preventing unfair competition; it was issued "to make more clear and specific what had already been enjoined" [*Singer Mfg. Co.* v. *Seinfeld*, 89 F.2d 35, 37 (2d Cir. 1937)] after a sufficient showing that Atlas had placed a construction on the original decree that was contrary to its spirit and the intention of the trial court and was threatening to act acccordingly.[3]

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[3] At the hearing on Pursche's motion the trial judge stated in these words what he had meant by the decree:

> "It seemed to me when I signed the judgment that it would be unnecessary to use the additional language which you now seek to put in there, but it also seems to me—and I am frank to say so—that if Atlas is claiming any rights at all in the Chandler patents, that they lost by virtue of the judgment in this case. . . . Whatever they acquired in the Chandler patents was acquired wrongfully and by fraud and belonged to Pursche. Now if you have to use different

Following the remittitur and after the final judgment had been settled as to form, but prior to entry, Pursche visited Chandler and sought to purchase the latter's patents. Precisely what representation Pursche made concerning the effect of the ensuing judgment is disputed. But, in any event, no agreement was reached. On learning of the incident, Atlas moved the trial court to withhold entry on the grounds that Pursche's conduct was unconscionable. Atlas urges as its final point the denial of this motion.

We entertain grave doubt that the trial court possessed authority to impose such a drastic sanction. In none of the cases cited by Atlas was this done or suggested.[4] And an independent search has not proved enlightening. However, assuming power, we agree with the trial court's characterization of the argument as a "tempest in a teapot."

It is only Atlas' hyperbole that tends to make Pursche's asserted conduct of dubious propriety.

The judgment is affirmed.

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language than I used before to spell that out, I think this should be done."

The provision in the injunction affirmatively requiring Atlas to assign to Pursche all its interest in the Chandler patents was clearly within the spirit of the opinion and a permissible means to effectively forestall future unfair competition under some devious construction. The reservation in the grant-back clause, making such inventions "available" to Atlas, read in context, suggests that this right was conterminous with the licensing agreement.

[4] The cases are Gorham Mfg. Co. v. Emery-Bird-Thayer Dry-Goods Co., 92 F. 774 (C.Ct. W.D. Mo., W.D. 1899); Hoover Co. v. Sesquicentennial Exhibition Ass'n, 26 F. 2d 821 (D.C. E.D. Pa. 1928) and United Kingdom Optical Co. Ltd. v. American Optical Co., 68 F. 2d 637 (1st Cir. 1934). They hold no more than that a fraudulent misrepresentation of a court's decision or process constitutes a contempt of court.

Final Judgment

Filed Oct. 10, 1963, Clerk U.S. District Court, Southern District of California

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UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF CALIFORNIA, CENTRAL DIVISION

Civil Action No. 16,005-PH

HARRY A. PURSCHE, an individual, *Plaintiff*,

v.

ATLAS SCRAPER AND ENGINEERING Co., a corporation, *Defendant.*

Civil Action No. 20,408-PH

ATLAS SCRAPER AND ENGINEERING Co., a corporation, *Plaintiff*

v.

HARRY A. PURSCHE, an individual, *Defendant.*

FINAL JUDGMENT

This final Judgment is entered pursuant to and concurrently with the spreading of the Mandate of the Court of Appeals.

I

That the party Harry A. Pursche is the owner of the entire right, title and interest in and to United States Letters Patent No. 2,625,089 and such patent and each of the claims thereof are good and valid at law.

II

That the party Harry A. Pursche is the owner of the entire right, title and interest in and to United States Letters Patent No. 2,625,090 and claims 6, 7, 8, 9, 11, 12, 13, 15, 16, 20, 21, 22, 23, 24 and 27 thereof are good and valid at law, and claims 2 to 5 inclusive, 10, 14, 17, 18, 19, 25 and 26 thereof are invalid.

III

That the party Harry A. Pursche is the owner of the entire right, title and interest in and to United States Letters Patent No. 2,625,091 and such patent and each of the claims thereof are good and valid at law.

IV

That the party Harry A. Pursche is the owner of the entire right, title and interest in and to United States Letters Patent No. 2,633,786 and such patent and each of the claims thereof are invalid.

V

That the party Harry A. Pursche is the owner of the entire right, title and interest in and to United States Letters Patent No. 2,659,284 and such patent and each of the claims thereof are invalid.

VI

That the party Atlas Scraper and Engineering Co. has infringed Claims 12, 13, 14, 15 and 16 of Patent No. 2,625,089 by the manufacture and sale of carriage type two-way plows of Exhibit 18.

VII

That the party Atlas Scraper and Engineering Co. has infringed claims 6, 7, 8, 9, 11, 12, 13, 15, 16, 20, 21, 22, 23, 24 and 27 of Patent No. 2,625,090 by the manufacture and sale of carriage type two-way plows of Exhibit 18.

VIII

That the party Atlas Scraper and Engineering Co. has infringed claims 12 and 27 of Patent No. 2,625,090, by the manufacture and sale of tractor mounted two-way plows of Exhibit 22.

IX

That the party Atlas Scraper and Engineering Co. has infringed claims 6, 7, 8, 9, 14, 15 and 22 of Patent No. 2,625,091 by the manufacture and sale of carriage type two-way plows of Exhibit 18.

X

That claim 1 of Patent No. 2,625,090 is invalid as being broader than the invention.

XI

That the party Harry A. Pursche have judgment on his First Amended and Supplemental Complaint for infringement of claims 12, 13, 14, 15 and 16 of Patent No. 2,625,089.

XII

That the party Harry A. Pursche have judgment on his First Amended and Supplemental Complaint for infringement of claims 6, 7, 8, 9, 11, 12, 13, 15, 16, 20, 21, 22, 23, 24 and 27 of Patent No. 2,625,090, except as to the Atlas plows of Exhibit 20, (Items B-3 and B-7), Exhibit 21, (Item B-4), and Exhibit 23, (Item B-6).

XIII

That the party Harry A. Pursche have judgment on his First Amended and Supplemental Complaint for infringement of Claims 6, 7, 8, 9, 14, 15 and 22 of Patent No. 2,625,091.

XIV

That the party Harry A. Pursche have judgment on his First Amended and Supplemental Complaint for Unfair Competition to the extent set forth herein.

XV

That the party Atlas Scraper and Engineering Co. have judgment on his amended Complaint for Declaratory Relief that the Atlas plows of Exhibit 20, (Items B-3 and B-7), Exhibit 21 (Item B-4), and Exhibit 23 (Item B-6), do not infringe any of the Pursche patents in suit.

XVI

That the inventions of Roy L. Chandler, as defined and set forth in Patent No. 2,773,439 (Exhibit 42), Patent No. 2,817,241 (Exhibit 44), the Roy L. Chandler application Serial No. 334,578, filed February 2, 1953 (Exhibit 51), now Patent No. 2,842,038, and the tail wheel and the roll-over mechanism as shown in Figure 6 of Patent No. 2,830,-519 (Exhibit AR), were made in the course of his employment by the party Atlas Scraper and Engineering Co. and entirely at the expense of the party Atlas and while Chandler was employed as an engineer to do layout and design work and while the Royalty License Agreement of April 3, 1948, was in effect between the parties Harry A. Pursche and Atlas Scraper and Engineering Co., and said inventions of Roy L. Chandler were the property of the party Atlas and should have been assigned to Harry A. Pursche under the terms of Paragraph IX of said Royalty License Agreement. The concealment from Harry A. Pursche by Atlas Scraper and Engineering Co. of said Roy L. Chandler inventions and the facts relevant to the making of said inventions was fraudulent, and the continued use of said inventions by Atlas Scraper and Engineering Co. constituted Unfair Competition.

XVII

It is therefore the order of this Court that the party Atlas Scraper and Engineering Co. within thirty days from the date of entry of this Final Judgment assign to Harry A. Pursche, his heirs and assigns, its entire right, title and interest in and to said Roy L. Chandler patents Nos. 2,773,439, 2,817,241, and 2,842,038, and the inventions covered thereby, and the design of the tail wheel and roll-

over mechanism as shown in Figure 6 of Patent No. 2,830,519.

XVIII

That the party Harry A. Pursche is entitled to a perpetual injunction, and for the issuance of that injunction out of and under the seal of this Court, restraining the party Atlas Scraper and Engineering Co., its officers, agents, servants, employees, and those persons, companies, or corporations in active concert or participation with them from making, using, or selling two-way plows containing the inventions embodied in United States Letters Patent Nos. 2,625,089, Claims 12, 13, 14, 15, and 16; 2,625,090, Claims 6, 7, 8, 9, 11, 12, 13, 15, 16, 20, 21, 22, 23, 24, and 27; and 2,625,091, Claims 6, 7, 8, 9, 14, 15, and 22, or any of them, the said claims being set forth in full below:

Patent No. 2,625,089, Claim 12:

"12. In a two way plow assembly, the combination of a frame; a carrier extending rearwardly from the frame and provided with a right-hand plow and a left-hand plow; means on the frame for turning the carrier about a longitudinal axis to bring either plow into operative position; a pair of laterally spaced supporting wheels on opposite sides of the frame; arms pivotally mounted on the frame; means connecting the extending end of each arm to one of said supporting wheels; upright standards on the frame; pivot means on each arm intermediate the ends thereof; and upright power cylinder assemblies each operatively interposed between the pivot means on one of said arms and the upper portion of one of said standards for pivoting the arms relative to the frame."

Patent No. 2,625,089, Claim 13:

"13. In a two way plow assembly, the combination of a frame; a carrier extending rearwardly from the frame and provided with a right-hand plow and a left-hand plow; means on the frame for turning the carrier about a longitudinal axis to bring either plow into operative position; a pair of laterally spaced supporting wheels on op-

posite sides of the frame; arms pivotally mounted on the frame; means connecting the extending end of each arm to one of said supporting wheels; upright standards on the frame; pivot "means on each arm intermediate the ends thereof; a cross brace extending transversely of the frame and joining the upper ends of the standards; and power cylinder assemblies each operatively interposed between the pivot means on one of said arms and the upper portion of one of said standards for pivoting the arms relative to the frame."

Patent No. 2,625,089, Claim 14:

"14. In a two way plow assembly, the combination of a frame; a carrier extending rearwardly from the frame and provided with a right-hand plow and a left-hand plow, means on the frame for turning the carrier about a longitudinal axis to bring either plow into operative position; a pair of laterally spaced supporting wheels on opposite sides of the frame; arms pivotally mounted on the frame for movement about a common axis; means connecting the extending end of each arm to one of said supporting wheels; pivot means on each arm intermediate the ends thereof; upright standards on the frame; and power cylinder assemblies each operatively interposed between one end of the cross brace and the pivot means on one of said arms for pivoting the arms relative to the frame."

Patent No. 2,625,089, Claim 15:

"15. In a two way plow assembly, the combination of a frame having parallel side members; a carrier extending rearwardly from the frame and provided with a right-hand plow and a left-hand plow; means on the frame for turning the carrier about a longitudinal axis to bring either plow into operative position; a pair of laterally spaced supporting wheels on opposite sides of the frame; rearwardly extending arms pivotally mounted on the frame at the forward ends of the side members for movement about a common axis, the arms extending for a major portion of the length of the side members; means connecting the ex-

tending end of each arm to one of said supporting wheels; upright standards on the side members of the frame; a cross brace extending transversely "of the frame and joining the upper ends of the standards; and power cylinder assemblies each pivotally connected to the cross brace at one end and to one of said arms at the other end at a location between said axis and the wheel, whereby the arms may be pivoted relative to the frame."

Patent No. 2,625,089, Claim 16:

"16. In a two way plow assembly, the combination of a frame having parallel side members; a carrier extending rearwardly from the frame and provided with a right-hand plow and a left-hand plow; means on the frame for turning the carrier about a longitudinal axis to bring either plow into operative position; a pair of laterally spaced supporting wheels on opposite sides of the frame; arms pivotally mounted on the frame, the arms extending for a major portion of the length of the side members; means connecting each arm to one of said supporting wheels, means for pivoting the arms relative to the frame said means including an upright structure including standard members on the side members of the frame and a cross brace member extending transversely of the frame and joining the upper ends of the standard members, and power cylinder assemblies operatively interposed between each of said arms and the said upright structure."

Patent No. 2,625,090, Claim 6:

"6. In a two-way plow assembly, the combination of a frame, a tongue pivotally connected to the frame for relative lateral movement, a carrier mounted on the frame and provided with a right hand plow and a left hand plow, first power means on the frame for moving the carrier to bring either plow into operative position, second power means on the frame for shifting the tongue, and stationary power transmitting elements interconnecting said first and second power means for conjoint operation, whereby the tongue is shifted in response to movement of the carrier."

Patent No. 2,625,090, Claim 7:

"7. In a two-way plow assembly, the combination of a mobile frame, a forwardly extending tongue pivotally connected to the frame for relative lateral movement, a rearwardly extending carrier on the frame provided with a right hand plow and a left hand plow, first hydraulic means for turning the carrier about a longitudinal axis to bring either plow into operative position, second hydraulic means on the frame for shifting the tongue, and hydraulic conduits connecting said first and second hydraulic means for conjoint operation, whereby the tongue is shifted in accordance with movement of the carrier."

Patent No. 2,625,090, Claim 8:

"8. In a two-way plow assembly, the combination of a mobile frame, a forwardly extending tongue pivotally connected to the frame for relative lateral movement, a rearwardly extending carrier on the frame provided with a right hand plow and a left hand plow, fluid pressure responsive means adapted to turn the carrier about a longitudinal axis to bring either plow into operative position, additional fluid pressure responsive means on the frame for shifting the tongue, and fluid conduit means connecting the two said fluid pressure responsive means in parallel for conjoint operation, whereby the tongue is shifted in accordance with movement of the carrier."

Patent No. 2,625,090, Claim 9:

"9. In a two-way plow assembly, the combination of a mobile frame, a forwardly extending tongue pivotally connected to the frame for relative lateral movement, a rearwardly extending carrier on the frame provided with a right hand plow and a left hand plow, a pair of double acting hydraulic power cylinders on the frame, one of said power cylinders being adapted to turn the carrier to bring either plow into operative position, and the other power cylinder being adapted to shift the tongue in either "direction, and means including hydraulic lines for connecting said power cylinders in parallel for operation in unison."

Patent No. 2,625,090, Claim 11:

"11. In a two-way plow assembly, the combination of a stationary beam member extending longitudinally in the direction of normal movement of the plow assembly, a carrier turnably mounted on said beam member and provided with a right hand plow and a left hand plow, a cross member fixed relative to said beam member at a position in advance of said carrier and plows, lift means connected with the cross-member for lifting the entire length of the beam member and thereby raising the carrier and plows out of ground-engaging position, a spooling drum on the forward end of the carrier, a flexible cable spooled on said drum, and power means independent of the lift means mounted on the cross member and operatively connected to the cable, the power means acting through the cable and drum to turn the carrier to bring either plow into operative position."

Patent No. 2,625,090, Claim 12:

"12. In a two-way plow assembly, the combination of a stationary beam member extending longitudinally in the direction of normal movement of the plow assembly, a carrier turnably mounted on said beam member between the ends thereof and provided with a right hand plow and a left hand plow, a cross member fixed relative to said beam member at a position in advance of said carrier and plows, means including a hydraulic power cylinder carried on the cross member for turning the carrier to bring either plow into operative position, and lift means connected with the cross member for lifting the entire length of the beam member and thereby raising the carrier and plows out of ground-engaging position."

Patent No. 2,625,090, Claim 13:

"13. In a two-way plow assembly, the combination of a stationary beam member extending longitudinally in the direction of normal movement of the plow assembly, a carrier turnably mounted on said beam member and provided with a right hand plow and a left hand plow, a cross mem-

ber fixed relative to said beam member at a position in advance of said carrier and plows, power means including a double-acting hydraulic cylinder mounted on the cross member parallel thereto, a flexible element connected for operation by said hydraulic cylinder and encircling a portion of the carrier to bring either plow into operative position, and lift means connected with the ends of the cross member for lifting the carrier and plows out of ground-engaging position."

Patent No. 2,625,090, Claim 15:

"15. In a two-way plow assembly, the combination of: a frame, a pair of laterally spaced ground-contacting wheels for supporting the frame, a forwardly extending tongue pivotally connected to the frame and adapted for connection to a towing vehicle, a rearwardly extending beam fixed to said frame, a carrier turnably mounted on the beam intermediate the ends thereof and provided with a right-hand plow and a left-hand plow, a tail wheel supported on the carrier, means on the frame independent of movement of the plow assembly relative to the ground for raising the frame and carrier relative to said pair of supporting wheels, said means acting to tilt the beam about the forward end of the tongue and raise the outer end of the beam to lift the plows and tail wheel clear of the ground, and means on the frame for turning the carrier relative to the beam to bring either plow into operative position."

Patent No. 2,625,090, Claim 16:

"16. In a two-way plow assembly, the combination of: a frame, a pair of laterally spaced ground-contacting wheels for supporting the frame, a forwardly extending tongue pivotally connected to the frame and adapted for connection to a towing vehicle, a rearwardly extending beam fixed to said frame at longitudinally spaced locations, a carrier mounted to turn on the beam and provided with a right-hand plow and a left-hand plow, a tail wheel supported on the carrier adapted to roll on unplowed ground when either plow is in operation, means on the frame for

raising the frame and carrier relative to said pair of supporting wheels, said means acting to raise the beam and lift the plows and tail wheel clear of the ground, first power means on the frame for moving the carrier to bring either plow into operative position, second power means on the frame for shifting the tongue toward the same side of the frame on which the tail wheel is positioned, and means interconnecting the first and second power means for conjoint operation."

Patent No. 2,625,090, Claim 20:

"20. In a two-way plow assembly, the combination of: a frame, a tongue pivotally connected to the frame for relative lateral movement, a carrier mounted on the frame and provided with ground-engaging plow means for producing either a right-hand furrow or a left-hand furrow, power means on the frame for turning the carrier to either of two operative positions relative to the frame to cause the plow means to produce a right-hand furrow or a left-hand furrow as desired, second power means on the frame for shifting the tongue, and stationary power-transmitting elements interconnecting said first and second power means for conjoint operation, whereby the tongue is shifted in response to movement of the carrier."

Patent No. 2,625,090, Claim 21:

"21. In a two-way plow assembly, the combination of: a mobile frame, a forwardly extending tongue pivotally connected to the frame for relative lateral movement, a rearwardly extending carrier on the frame provided with ground-engaging plow means for producing either a right-hand furrow or a left-hand furrow, first hydraulic means on the frame for turning the carrier to either of two operative positions relative to the frame to cause the plow means to produce a right-hand furrow or a left-hand furrow as desired, second hydraulic means on the frame for shifting the tongue, and hydraulic conduits connecting said first and second hydraulic means for conjoint opera-

tion, whereby the tongue is shifted in accordance with movement of the carrier."

Patent No. 2,625,090, Claim 22:

"22. In a two-way plow assembly, the combination of: a mobile frame, a forwardly extending tongue pivotally connected to the frame for relative lateral movement, a rearwardly extending carrier on the frame provided with ground-engaging plow means for producing either a right-hand furrow or a left-hand furrow, fluid pressure responsive means on the frame for turning the carrier to either of two operative positions relative to the frame to cause the plow means to produce a right-hand furrow or a left-hand furrow as desired, additional fluid pressure responsive means on the frame for shifting the tongue, and fluid conduit means connecting the two said fluid pressure responsive means in parallel for conjoint operation, whereby the tongue is shifted in accordance with movement of the carrier."

Patent No. 2,625,090, Claim 23:

"23. In a two-way plow assembly, the combination of: a mobile frame, a forwardly extending tongue pivotally connected to the frame for relative lateral movement, a rearwardly extending carrier on the frame provided with ground-engaging plow means for producing either a right-hand furrow or a left-hand furrow, a pair of double-acting hydraulic power cylinders on the frame, one of said power cylinders being adapted to turn the carrier to either of two operative positions relative to the frame to cause the plow means to produce a right-hand furrow or a left-hand furrow as desired, and the other power cylinder being adapted to shift the tongue in either direction, and means including hydraulic lines for connecting said power cylinders in parallel for operation in unison."

Patent No. 2,625,090, Claim 24:

"24. In a two-way plow assembly, the combination of: a frame, a pair of laterally spaced ground-contacting wheels for supporting the frame, a forwardly extending tongue pivotally connected to the frame and adapted for connection to a towing vehicle, a rearwardly extending beam fixed to said frame at longitudinally spaced locations, a carrier mounted to turn relative to the beam and provided with ground-engaging plow means for producing either a right-hand furrow or a left-hand furrow, a tail wheel assembly supported on the carrier, means on the frame for raising the frame and carrier relative to said pair of supporting wheels, said means acting to raise the beam and lift the plow means and tail wheel assembly clear of the ground, first power means on the frame for turning the carrier to either of two operative positions relative to the frame to cause the plow means to produce a right-hand furrow or a left-hand furrow as desired, second power means on the frame for shifting the tongue toward the same side of the frame on which the tail wheel assembly is positioned, and means interconnecting the first and second power means for conjoint operation."

Patent No. 2,625,090, Claim 27:

"27. In a two-way plow assembly, the combination of: a frame, a stationary longitudinal beam member fixed on and extending rearwardly from the frame, a carrier turnably mounted on the beam member and provided with ground-engaging plow means for producing a right-hand furrow or a left-hand furrow, power means for turning the carrier relative to the beam member including a torque receiving element fixed on the forward end of said carrier, a hydraulic power cylinder assembly mounted on the frame and having a power element movable in a plane normal to said beam member, and means including an intermediate power transmitting element operatively interposed between the power element and the torque receiving element, whereby the power cylinder assembly may turn the carrier in either direction."

Patent No. 2,625,091, Claim 6:

"6. In a two way plow assembly, the combination of a mobile frame having parallel side members and an arcuate front member; a stationary beam member mounted centrally of the frame parallel to the side members and extending rearwardly from said frame; a carrier turnably mounted on the projecting portion of said beam member and provided with a right-hand plow and a left-hand plow; power means on the frame adapted to turn the carrier to bring either plow into operative position; a tongue having a bifurcated portion adapted to straddle the beam member and the arcuate front member; pivotal means connecting the outer ends of the bifurcated portion to said beam member; a roller on the tongue adapted to roll on the arcuate front member; and power means on the frame adapted to shift said tongue about said pivotal means."

Patent No. 2,625,091, Claim 7:

"7. In a two way plow assembly, the combination of: a mobile frame, a stationary beam member extending longitudinally of the frame and projecting rearwardly therefrom, a carrier turnably mounted on the projecting portion of said beam member and provided with plow means for forming a right-hand furrow and a left-hand furrow, a draft tongue, means forming a direct pivotal connection between the tongue and said beam member, and power means on the frame for shifting the tongue about said pivot means."

Patent No. 2,625,091, Claim 8:

"8. In a two way plow assembly, the combination of: a mobile frame, a stationary beam member extending longitudinally of the frame and projecting rearwardly therefrom, the frame having a pair of longitudinally spaced cross-members connected to said beam member, a carrier turnably mounted on the projecting portion of said beam member and provided with plow means for forming a right-hand furrow and a left-hand furrow, pivot means on the beam member positioned between said cross-members,

a tongue extending forwardly from the frame and being directly connected to the beam member by said pivot means, and power means on the frame for shifting the tongue about said pivot means."

Patent No. 2,625,091, Claim 9:

"9. In a two way plow assembly, the combination of: a mobile frame having parallel side members and an arcuate front member, a stationary beam member mounted centrally of the frame parallel to the side members and extending rearwardly from said frame, a carrier turnably mounted on the projecting portion of the beam member provided with a right-hand plow and a left-hand plow, a tongue having a bifurcated portion adapted to straddle a portion of the frame including the arcuate front member, pivot means connecting the outer ends of the bifurcated portion to the frame, a roller on the tongue adapted to roll on the arcuate front member, and power means on the frame adapted to shift said tongue about said pivot means."

Patent No. 2,625,091, Claim 14:

"14. In a two way plow assembly, the combination of a mobile frame having parallel side members and an arcuate front member, a stationary beam member mounted centrally of the frame parallel to the side members and extending rearwardly from said frame, a carrier turnably mounted on the projecting portion of said beam member and provided with ground-engaging plow means for producing either a right-hand furrow or a left-hand furrow, power means on the frame for turning the carrier to either of two operative positions relative to the frame to cause the plow means to produce a right-hand furrow or a left-hand furrow as desired, a tongue having a bifurcated portion adapted to straddle the beam member and the arcuate front member, a pivotal means connecting the outer ends of the bifurcated portion to said beam member, a roller on the tongue adapted to roll on the arcuate front member, and power means on the frame adapted to shift said tongue about said pivotal means."

Patent No. 2,625,091, Claim 15:

"15. In a two way plow assembly, the combination of a frame, transversely spaced supporting wheels on the frame alternately adapted to roll in a furrow, a carrier turnably mounted on the frame about a longitudinal axis and provided with a right-hand plow and a left-hand plow, each of the plows having a landside, a standard connecting the landsides, a pair of auxiliary scraper blades on the carrier, one in advance of each of said plows, means on the frame adapted to turn the carrier relative to the frame to bring either plow and its associated scraper blade into operative position and to bring the standards to a substantially vertical position, and a tail wheel on the carrier adapted to roll on unplowed ground adjacent said vertical standard."

Patent No. 2,625,091, Claim 22:

"22. In a two way plow assembly, the combination of a mobile frame having parallel side members, an arcuate front member, and a transverse rear member, a stationary beam member mounted centrally of the frame parallel to the side members and fixed to the front and rear members, the beam member projecting rearwardly from said frame, a carrier turnably mounted on the projecting portion of the beam member and provided with ground-engaging plow means for producing either a right-hand furrow or a left-hand furrow, a tongue having a bifurcated portion adapted to straddle the beam member and the arcuate front member, pivotal means connecting the outer ends of the bifurcated portion to said beam member, a roller on the tongue adapted to roll on the arcuate front member, limit stops on the arcuate front member for limiting the extent of pivotal movement of the tongue, and power means on the frame adapted to shift the tongue about said pivotal means."

XIX

That the party Harry A. Pursche is entitled to a perpetual injunction, and for the issuance of that injunction out of and under the seal of this Court, restraining the party Atlas Scraper and Engineering Co., its officers,

agents, servants, employees, and those persons, companies, or corporations in active concert or participation with them from making, using, or selling two-way plows embodying inventions, improvements, modifications, or betterments developed by and under the direction of the party Atlas Scraper and Engineering Co., its employees or agents, as defined and set forth in Patent No. 2,773,439 (Exhibit 42), patent No. 2,817,241 (Exhibit 44), the Roy L. Chandler application Serial No. 334,578, filed February 2, 1953 (Exhibit 51), now Patent No. 2,842,038, and the tail wheel and the rollover mechanism as shown in Figure 6 of Patent No. 2,830,519 (Exhibit AR), the claims of said patents reading as follows:

Chandler Patent No. 2,773,439, Claim 1:

"1. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame so as to pivot about a first axis and a second axis, the first axis being disposed transversely with respect to said horizontal axis, and the second axis being at right angles to said first axis; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages the arm to limit its upward swinging about the first axis to a path generally below the horizontal axis; and means carried by said frame to limit combined outward and downward swinging movement of said arm about said first and second axis under the force of gravity to a position beyond the plane of said spaced stops, and to cause the arm to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction."

Chandler Patent No. 2,773,439, Claim 2:

"2. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure com-

prising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame for universal swinging movements; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages the arm to limit its upward swinging through a path generally below the horizontal axis; and means carried by said frame to limit combined outward and downward swinging movement of said arm under the force of gravity to a position beyond the plane of said spaced stops, and to cause the arm to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction."

Chandler Patent No. 2,773,439, Claim 3:

"3. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame for universal movements; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages the arm to limit its upward swinging to a path generally below the horizontal axis; and a flexible member connected between said frame and said arm to limit combined outward and downward swinging movement of said arm under the force of gravity to a position beyond the plane of said spaced stops, and to cause the arm to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction."

Chandler Patent No. 2,773,439, Claim 4:

"4. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm;

pivot means connecting said arm to one side of said frame for universal swinging movements; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages the arm to limit its upward swinging to a path generally below the horizontal axis; and a chain member connected between said frame and said arm to limit combined outward and downward swinging movement of said arm under the force of gravity to a position beyond the plane of said spaced stops, and to cause the arm to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction."

Chandler Patent No. 2,773,439, Claim 5:

"5. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: a wheel; a support for said wheel; means connecting said support to one side of said frame so as to pivot about a first axis disposed transversely with respect to said horizontal axis; an element connected to said support so as to pivot with said support on said first axis, and pivot on a second axis at right angles to said first axis; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages said element to limit its upward swinging movement and the upper swinging movement of said wheel to a path generally below the horizontal axis; and means carried by said frame to limit combined outward and downward swinging movement of said element about said first and second axis under the force of gravity to a position beyond the plane of said spaced stops, and to cause the element to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction."

Chandler Patent No. 2,773,439, Claim 6:

"6. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: a wheel; a support for said wheel; pivot means connecting said support to one side of said frame for universal swinging movements; an element connected to said support so as to pivot therewith; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages said element to limit its upward swinging movement and the upper swinging movement of said wheel to a path generally below the horizontal axis; and means carried by said frame to limit combined outward and downward swinging movement of said element under the force of gravity to a position beyond the plane of said spaced stops, and to cause the element to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction."

Chandler Patent No. 2,773,439, Claim 7:

"7. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame for pivotal swinging movements about a first axis transverse to said horizontal axis; adjustable vertically spaced stops carried by said one side of said frame; stop engaging means movable with said arm and pivotally supported for swinging movements about an axis at an angle to said first axis; and means limiting said pivotal movements so that the stop engaging means will move under the force of gravity to a position out of a path of engagement with said spaced stops during movement of the frame from one of said sides to the other, and into a path of engagement below the lowermost of said stops as the frame approaches the end of its rotational movement in either direction."

Chandler Patent No. 2,773,439, Claim 8:

"8. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame for pivotal swinging movements about a first axis transverse to said horizontal axis; adjustable vertically spaced first members carried by said one side of said frame; a second member movable with said arm; means supporting said first members and said second member for limited relative movements under the force of gravity to positions out of a path of engagement during movement of the frame from one of said sides to the other, and into a path of engagement of said second member and the lowermost of said first members as the frame approaches the end of its rotational movement in either direction."

Chandler Patent No. 2,773,439, Claim 9:

"9. A claim according to claim 2, wherein said means includes a rail member."

Chandler Patent No. 2,773,439, Claim 10:

"10. A claim according to claim 2, wherein said means includes a rail member having spaced angularly extending portions for guiding said arm movement in a direction towards the plane of said stops."

Chandler Patent No. 2,773,439, Claim 11:

"11. A claim according to claim 2, wherein said means includes a rail member having an intermediate portion for guiding the movement of said arm in said position beyond the plane of said stops, and an angularly extending portion adjacent each end of the intermediate portion for guiding said arm in its movement to said position in the plane of said stops."

Chandler Patent No. 2,817,241, Claim 1:

"1. An actuating mechanism, comprising: a pivotally mounted driving member having a plurality of peripheral lobes separated by inwardly extending indentations; a pivotally mounted driven member having spaced projections adjacent its periphery adapted to successively enter said indentations upon concerted movement of said members; hook means carried by one of said lobes engageable with a pin entering an adjacent indentation, initial engagement with the pin acting to arrest further pivotal movement of the driven member, and further movement of the driving member moving the hook to a locking position restraining the driven member against independent reversal of said pivotal movement, but enabling reversed driving movement by said driving member."

Chandler Patent No. 2,817,241, Claim 2:

"2. An actuating mechanism, comprising: a pivotally mounted driving member having a plurality of peripheral lobes separated by inwardly extending indentations; a pivotally mounted driven member having spaced pins adjacent its periphery adapted to successively enter said indentations upon movement thereof; and a hook carried by one of said lobes for lockingly engaging a pin entering an adjacent indentation upon pivotal movement of the driving member and restraining independent pivotal movement of the driven member, but enabling reversed movement by said driving member."

Chandler Patent No. 2,817,241, Claim 3:

"3. An actuating mechanism, comprising: a pivotally mounted driving member having a plurality of peripheral lobes separated by inwardly extending indentations; a pivotally mounted driven member having spaced pins adjacent its periphery adapted to successively enter said indentations upon movement thereof; and hook means carried by one of said lobes for engaging a pin entering an adjacent indentation, whereby continued movement of the driven member is arrested."

Chandler Patent No. 2,817,241, Claim 4:

"4. An actuating mechanism, comprising: a pivotally mounted driving member having a peripheral section containing a plurality of lobes separated by inwardly extending indentations; a pivotally mounted driven member having spaced pins adjacent its periphery adapted to enter the indentations between said lobes and form a motion transmitting connection between said members; and lateral notches in the indentations respectively adjacent the ends of said section for lockingly receiving a pin therein so as to limit continued movement of said members beyond the limits of said section."

Chandler Patent No. 2,817,241, Claim 5:

"5. An actuating mechanism, comprising: a pivotally mounted driving member having a peripheral section containing spaced lobes; a pivotally mounted driven member having spaced pins adjacent its periphery adapted to enter the spaces between said lobes and form a motion transmitting connection between said members; and means at the opposite ends of said peripheral section for respectively engaging one of said pins so as to limit continued movement of said driven member."

Chandler Patent No. 2,817,241, Claim 6:

"6. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively, the driving member having a slot in which its pivot is laterally shiftable; means for limiting the concerted movement of said members; a cam member movably mounted on the driving member having a cam slot in which said pivot is positioned, movement of the cam member acting to shift said pivot and regulate the relative amounts of pivotal movement of the driving and driven members, and means associated with said cam member for indicating its position of adjustment."

Chandler Patent No. 2,817,241, Claim 7:

"7. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively, the driving member having a slot in which its pivot is laterally shiftable; means for limiting the concerted movement of said members; and a cam member movably mounted on the driving member having a cam slot in which said pivot is positioned, movement of the cam member acting to shift said pivot and regulate the relative amounts of pivotal movement of the driving and driven members."

Chandler Patent No. 2,817,241, Claim 8:

"8. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; means carried by said members movable into a pivotal movement limiting and locking position upon concerted pivotal movement of said members a predetermined extent; and a cam adjustable to relatively shift the driving member and its pivot mounting, so as to regulate the relative amounts of pivotal movement of said members."

Chandler Patent No. 2,817,241, Claim 9:

"9. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; means carried by said members movable into a pivotal movement limiting and locking position upon concerted pivotal movement of said members a predetermined extent; and means carried by one of said members for regulating the relative amounts of pivotal movement of said members."

Chandler Patent No. 2,817,241, Claim 10:

"10. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; and mutually co-acting parts carried by said members movable into

a position limiting and locking said driven member against continued or reversed pivotal movement, upon pivotal movement of said members a predetermined extent."

Chandler Patent No. 2,817,241, Claim 11:

"11. An actuating mechanism, comprising: a pivotally mounted driving member; a pivotally mounted driven member; a motion transmitting connection between said members including an indentation in one of said members; a pin carried by the other of said members movable into and out of said indentation during concerted movements of said members by the driving member; and an offset shoulder engageable by said pin for locking the pin against reversed independent movement by its associated member."

Chandler Patent No. 2,817,241, Claim 12:

"12. The combination with a structure supported for tilting movement about a pivot, of actuating mechanism for moving said structure between angularly related positions, said mechanism comprising: three relatively fixed pivotal centers on said structure; a pair of members mounted for pivotal rotation respectively about two of said centers and interconnected to form a driving member and a driven member; an arm connected at one end to the driven member for rotation therewith, and at its other end having a swingable connection with a support; and a variable length link having pivotal end connections respectively with the third pivotal center and the driving member, whereby length variations in said link will actuate said driving and driven members and angularly move said structure."

Chandler Patent No. 2,817,241, Claim 13:

"13. The combination with a structure supported for tilting movement about a pivot, of actuating mechanism for moving said structure between angularly related positions, said mechanism comprising: three relatively fixed pivotal centers on said structure; a pair of members mounted for pivotal movement respectively about two of said centers and interconnected to form a driving member

and a driven member; an arm connected at one end to the driven member for movement therewith and at its other end having a swingable connection with a support; a variable length link having pivotal end connections respectively with the third pivotal center and the driving member, whereby length variations in said link will actuate said driving and driven members and angularly move said structure; and motion limiting means carried by said members cooperative upon predetermined movement thereof to lock the driven member against independent movement, but enable reversed movement thereof by said driving member."

Chandler Patent No. 2,817,241, Claim 14:

"14. The combination with a structure supported for tilting movement about a pivot, of actuating mechanism for moving said structure between angularly related positions, said mechanism comprising: three relatively fixed pivotal centers on said structure; a pair of members mounted for pivotal movement respectively about two of said centers and interconnected to form a driving member and a driven member; an arm connected at one end to the "driven member for movement therewith and at its other end having a swingable connection with a support; and a variable length link including hydraulic power cylinder means having pivotal end connections respectively with the third pivotal center and the driving member, whereby length variations in said link will actuate said driving and driven members and angularly move said structure."

Chandler Patent No. 2,817,241, Claim 15:

"15. The combination with a tiltable structure of mechanism carried thereby for angularly shifting said structure with respect to a reference surface, comprising: three pivotal centers in triangular relationship carried by said structure; a driving member pivoted at one of said centers; a driven member pivoted at another of said centers and having an extension in engagement with said surface; a driving connection between said members; and a power

expansible and contractable link for actuating said driving member, said link being connected at one end to the remaining center and at its other to the driving member, whereby the driven member may be pivoted in opposite directions to tiltingly move said structure by changing the position of said extension."

Chandler Patent No. 2,817,241, Claim 16:

"16. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; a power actuating connection to said driving member; and means adjustable to shift the power actuating connection and pivot of the driving member while maintaining a constant spacing between said connection and driving member pivot to a plurality of positions."

Chandler Patent No. 2,817,241, Claim 17:

"17. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively, the driving member having a "slot; means for connection with a power actuating device, said means being laterally shiftable in said slot and including a pivot for the driving member; and camming means carried by the driving member for adjustably shifting said means."

Chandler Patent No. 2,817,241, Claim 18:

"18. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively, the driving member having a pair of spaced parallel slots; a pivotally mounted power connection bracket forming a pivotal support for the driving member, said bracket being supported so as to be laterally shiftable in said slots; and a plate supported on said driving member for endwise adjustable movements, said plate having a slot crossing one of the slots in the driving member at an angle and adapted to

adjustably position the bracket with respect to said driving member."

Chandler Patent No. 2,817,241, Claim 19:

"19. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; means mounting the pivot of the driving member for relative lateral movement with respect to the driving member to a plurality of fixed operating positions; a power actuating connection to said driving member; and means adjustable to shift the pivot of the driving member to said positions to selectively vary the driving ratio between said members and the consequent relative pivotal movement of the driven member."

Chandler Patent No. 2,842,038, Claim 1:

"1. In a two-way plow: a fixed support frame, a plow carrying frame mounted on said support frame for swinging movements from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for unitary movement with said carrying frame, and relative swinging movement about the pivot of said arm; an abutment adjacent said pivot adapted to limit downward swinging movement of the arm on either side of the support frame; a cross-member carried by said support frame having ends positioned on opposite sides of the support frame; adjustable stops at the ends of said cross-member for respectively limiting and varying upward movement of the arm on each side of the support frame; a pin carried by said support frame positioned below said cross-member; a member carried by said arm having a forked outer end adapted to engage said pin and shift the arm from one position of engagement with said abutment to its other position of engagement with said abutment during change of the plow frame from one side to the other of said support frame."

Chandler Patent No. 2,842,038, Claim 2:

"2. In a two-way plow: a support frame; a plow carrying frame mounted on said support frame for swinging movements from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for movement with said plow carrying frame, and relative swinging movement in a substantially vertical plane on either side of said support frame; spaced first stops adjacent the pivot of said arm for respectively limiting the downward swinging movement of the arm on each side of the support frame; second stops carried by said support frame respectively adjustable to limit the upward movement of the arm on each side of the support frame; a projection carried by said arm having a forked end; a projection carried by said support frame in the line of movement of said fork and engageable thereby, upon changing the plow frame from one side to the other of the support frame, said fork and latter projection acting to shift said arm between said first stops during said changes of the plow frame."

Chandler Patent No. 2,842,038, Claim 3:

"3. In a two-way plow: a support frame; a plow carrying frame mounted on said support frame for swinging movement from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for movement with said plow carrying frame, and relative swinging movement in a substantially vertical plane on either side of said support frame; spaced first stops adjacent the pivot of said arm for respectively limiting the downward swinging movement of the arm on each side of the support frame; second stops carried by said support frame respectively adjustable to limit the upward movement of the arm on each side of the support frame; and means for controllably moving the arm from one of the said first stops to the other first stop during movement of the plow frame from said one side of the support frame to the other side thereof."

Chandler Patent No. 2,842,038, Claim 4:

"4. In a two-way plow: a support frame; a plow carrying frame mounted on said support frame for swinging movements from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for movement with said plow carrying frame, and relative swinging movement in a substantially vertical plane on either side of said support frame; means adjacent the pivot of said arm for respectively limiting the downward swinging movement of the arm on each side of the support frame; and adjustable means carried by said support frame for respectively limiting the upward movement of the arm on each side of the support frame."

Chandler Patent No. 2,842,038, Claim 5:

"5. In a two-way plow: a support frame, a plow carrying frame mounted on said support frame for swinging movements from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for movement with said plow carrying frame, and relative swinging movement in a substantially vertical plane on either side of said support frame; and adjustable stop means supported independently of said plow carrying frame for variably changing the upward limit of swing of said arm so as to vary the plowing depth."

Chandler Patent No. 2,842,038, Claim 6:

"6. In a two-way plow: a support frame; a plow frame mounted on said support frame for swinging movement from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel on said plow frame for swinging movements; stops limiting said arm movements, when the tail wheel is positioned on etiher side of the support frame, to a path positioned generally below a horizontal plane passing through said support frame, one of said stops being carried by said plow frame, and the other by said support frame; and means for adjusting the latter of said stops to vary the upward swinging limit of the arm and determine the plowing depth."

Chandler Patent No. 2,842,038, Claim 7:

"7. In a two-way plow: a support frame; a plow frame mounted on said support frame for swinging movement from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel on said plow frame for swinging movements; and stops limiting said arm movements, when the tail wheel is positioned on either side of the support frame, to a path positioned generally below a horizontal plane passing through said support frame, one of said stops being carried by said support frame, and the other by said plow frame."

Chandler Patent No. 2,842,038, Claim 8:

"8. In a two-way plow: a support frame; a rollover frame carried by said support frame and adapted for swinging movement from one side to the other thereof to selectively present associated plow members for use; a depth gauge wheel carried by said rollover frame and movable therewith from an operating position on one side of the support frame to an operating position on the other side of the support frame; an axle rotatably supporting said wheel; mounting means connecting said axle with said rollover frame for relative movement therebetween in going from one operating position to the other; and means including an element carried by the support frame to cause said relative movement of said axle from one operating position to the other to be constrained such that undesirable free movement of said gauge wheel during swinging movement of said rollover frame is minimized."

Chandler Patent No. 2,842,038, Claim 9:

"9. In a two way plow, the combination of: a mobile frame including a rearwardly extending longitudinal beam, a carrier mounted to turn on said beam, ground-engaging plow means mounted upon the carrier for producing either a right-hand or a left-hand furrow, means for turning the carrier to either of two operative positions to form a right-hand furrow or a left-hand furrow, as desired, a swinging arm pivotally connected to said carrier, stop means limiting

pivotal movement of the arm relative to the carrier in either direction, a tail wheel mounted on said swinging arm and adapted to roll upon unploughed ground in either operative position of said carrier, a stationary member fixed relative to the longitudinal beam, a pair of laterally spaced contact elements on said member, each of said elements engaging said wheel arm in one of the operative positions of the carrier to maintain the wheel axis below the pivotal axis of said arm."

Chandler Patent No. 2,842,038, Claim 10:

"10. In a two way plow, the combination of: a mobile frame including a rearwardly extending longitudinal beam, a carrier mounted to turn on said beam, ground-engaging plow means mounted upon the carrier for producing either a right-hand furrow or a left-hand furrow, means for turning the carrier to either of two operative positions to form a right-hand furrow or a left-hand furrow, as desired, a swinging arm pivotally connected to said carrier, stop means limiting pivotal movement of the arm relative to the carrier in either direction, a tail wheel mounted on said swinging arm and adapted to roll upon unploughed ground in either operative position of said carrier, a stationary bracket fixed relative to the longitudinal beam near the rear end thereof, a pair of laterally spaced contact elements on said bracket, each of said elements engaging said wheel arm in one of the operative positions of the carrier to limit downward movement of the carrier."

Chandler Patent No. 2,842,038, Claim 11:

"11. In a two way plow, the combination of: a mobile frame including a rearwardly extending longitudinal beam, a carrier mounted to turn on said beam, ground-engaging plow means mounted upon the carrier for producing either a right-hand furrow or a left-hand furrow, means for turning the carrier to either of two operative positions to form a right-hand furrow or a left-hand furrow, as desired, a swinging arm pivotally connected to said carrier, stop means limiting pivotal movement of the arm relative to

the carrier in either direction, a tail wheel mounted on said swinging arm and adapted to roll upon unploughed ground in either operative position of said carrier, a stationary bracket fixed relative to the longitudinal beam near the rear end thereof, a pair of laterally spaced contact elements on said bracket, each of said elements engaging said wheel arm at a location forwardly from the wheel axis in one of the operative positions of the carrier to limit downward movement of the carrier."

Chandler Patent No. 2,842,038, Claim 12:

"12. In a two way plow, the combination of: a mobile frame including a rearwardly extending longitudinal beam, a carrier mounted to turn on said beam and being provided with a right-hand plow and a left-hand plow, means for turning the carrier to either of two operative positions to bring either plow into ground-engaging relation, a swinging arm pivotally connected to said "carrier, stop means limiting pivotal movement of the arm relative to the carrier in either direction, a tail wheel mounted on said swinging arm and adapted to roll upon unploughed ground in either operative position of said carrier, a stationary bracket fixed relative to the longitudinal beam near the rear end thereof, a pair of laterally spaced contact elements each adjustably fixed on said bracket, each of said elements engaging said wheel arm in one of the operative positions of the carrier to limit downward movement of the carrier and maintain the wheel axis below the axis of the longitudinal beam, said elements each being adjustable in a direction to vary the extent of movement of said swinging arm."

XX

That the party Harry A. Pursche recover from the party Atlas Scraper and Engineering Co., his damages herein by reason of the unfair competition of the party Atlas Scraper and Engineering Co. in its use of the inventions, improvements, modifications and betterments as such are set forth and defined in Patent No. 2,773,439 (Exhibit 42), Patent No. 2,817,241 (Exhibit 44), the Roy L. Chandler

application Serial No. 334,578, filed February 2, 1953 (Exhibit 51), now Patent No. 2,842,038, and the tail wheel and the rollover mechanism of Figure 6 of Patent No. 2,830,519 (Exhibit AR), subsequent to the termination of the agreement, Exhibit 7 (Item B-19).

XXI

That the party Harry A. Pursche recover his damages herein by reason of the infringement and unfair competition of the party Atlas Scraper and Engineering Co., and that this cause be referred to Theodore Hocke, Esq., as Special Master to take and report to the Court an account of the damages due to the party Harry A. Pursche.

XXII

Each party shall pay its own costs.

Dated at Los Angeles, California, this 10th day of Oct., 1963. 9:50 A.M.

PEIRSON M. HALL,
United States District Judge.

Approved: LYON & LYON, LEWIS E. LYON, JOHN B. YOUNG.

JOHN B. YOUNG,
Attorneys for Harry A. Pursche.

Approved: WHANN & MCMANIGAL, R. WELTON WHANN, ROBERT M. MCMANIGAL.

——, ——,
Attorneys for Atlas Scraper and Engineering Co.

Receipt of a copy of this instrument, Final Judgment, is acknowledged on September 13, 1963, at 1:00 P.M.

WHANN & MCMANIGAL,

By [Copy Illegible]
Attorneys for Atlas Scraper and Engineering Co.

Order Relating to Form of Final Judgment

Filed Aug. 29, 1963, Clerk, U.S. District Court, Southern District of California

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Attorneys for Harry A. Pursche

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF CALIFORNIA, CENTRAL DIVISION

Civil Action No. 16,005-PH

HARRY A. PURSCHE, an individual, *Plaintiff*,

vs.

ATLAS SCRAPER AND ENGINEERING CO., a corporation, *Defendant*.

Civil Action No. 20,408-PH

ATLAS SCRAPER AND ENGINEERING CO., a corporation. *Plaintiff*,

vs.

HARRY A. PURSCHE, an individual, *Defendant*.

ORDER RELATING TO FORM OF FINAL JUDGMENT

This Court having considered the Opinion of United States Court of Appeals for the Ninth Circuit, filed December 12, 1961, in Appeals Nos. 16,410 and 16,411, and having considered the proposed "Final Judgement" filed by each of the parties, and having heard oral argument of counsel for both parties in open Court, and being fully

advised in the premises; it is hereby ordered that the Final Judgment Modified to Conform to the Opinion of the United States Court of Appeals for the Ninth Circuit, and relating to the subject actions, take the following form:

Paragraphs I through XV, inclusive, shall be identical to Paragraphs I through XV, respectively, of the document entitled "Final Judgment Modified to Conform to Opinion of United States Court of Appeals for the Ninth Circuit, etc." filed by counsel for Atlas on March 27, 1963.

Paragraphs XVI, XVII, XVIII, XIX, XX, and XXI shall be identical to Paragraphs XV, XVI, VII, XVIII, XIX, and XX, respectively, set forth in the document entitled "Final Judgment," lodged in this Court March 4, 1963, by counsel for Pursche.

Paragraph XXII shall state "Each party shall pay its own costs."

Dated at Los Angeles, California, this 29 day of August 1963.

PIERSON M. HALL,
United States District Judge.

Approved: LYON & LYON, LEWIS E. LYON, JOHN B. YOUNG.

JOHN B. YOUNG,
Attorneys for Harry A. Pursche.

Order Amending Final Judgment

Filed Apr. 21, 1964, Clerk, U.S. District Court, Southern District of California

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Attorneys for Harry A. Pursche

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF CALIFORNIA, CENTRAL DIVISION

Civil Action No. 16,005-PH

HARRY A. PURSCHE, an individual, *Plaintiff*,

vs.

ATLAS SCRAPER AND ENGINEERING CO., a corporation, *Defendant.*

Civil Action No. 20,408-PH

ATLAS SCRAPER AND ENGINEERING CO., a corporation, *Plaintiff*,

vs.

HARRY A. PURSCHE, an individual, *Defendant.*

ORDER AMENDING FINAL JUDJMENT

This Court, having entered Final Judgment on October 10, 1963, in each of the above-entitled cases, incorporating the Opinion of the United States Court of Appeals for the Ninth Circuit filed December 12, 1961, and this Court having considered timely motions filed by both parties to amend said Final Judgment, and having heard oral argu-

ment of counsel for both parties in open court, being fully advised in the premises, and having entered an order on April 17, 1964, (1) Denying Motion of Atlas to alter and amend Judgment, and (2) Granting Motion of Pursche to amend Judgment,

It is hereby ordered that the Final Judgment entered by this Court on October 10, 1963, be amended in Paragraph XIX, page 17, line 11, by changing "two-way plows" to read:

> ", or furnishing others with, or extending licenses to others to make, sell, or use devices"

so that the first portion of Judgment Paragraph XIX reads as follows, the remainder being unchanged:

> "That the party Harry A. Pursche is entitled to a perpetual injunction, and for the issuance of that injunction out of and under the seal of this Court, restraining the party Atlas Scraper and Engineering Co., its officers, agents, servants, employees, and those persons, companies, or corporations in active concert or participation with them from making, using, or selling, or furnishing others with, or extending licenses to others to make, sell, or use, devices embodying inventions, improvements, modifications, or betterments developed by and under the direction of the party Atlas Scraper and Engineering Co., its employees or agents, as defined and set forth in Patent No. 2,773,439 (Exhibit 42), patent No. 2,817,241 (Exhibit 44), the Roy L. Chandler application Serial No. 334,578, filed February 2, 1953, (Exhibit 51), now Patent No. 2,842,-038, and the tail wheel and the rollover mechanism as shown in Figure 6 of Patent No. 2,830,519 (Exhibit AR), the claims of said patents reading as follows: . . ."

Dated at Los Angeles, California, this 21 day of April, 1964.

PIERSON M. HALL,
United States District Judge.

Approved: LYON & LYON, LEWIS E. LYON, JOHN B. YOUNG.

[Copy illegible] April 20, 1964.
Attorneys for Harry A. Pursche

Approved as to form: WHANN & MCMANIGAL, R. WELTON WHANN, ROBERT B. MCMANIGAL, WELTON B. WHANN.

By [copy illegible]
Attorneys for Atlas Scraper and Engineering Co.

Order Denying Motion of Atlas to Alter and Amend Judgment and Granting Motion of Pursche to Amend Judgment.

Filed Apr. 17, 1964, Clerk, U.S. District Court, Southern District of California

UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF CALIFORNIA, CENTRAL DIVISION

No. 16,005-PH

HARRY A. PURSCHE, an individual, *Plaintiff*,

v.

ATLAS SCRAPER AND ENGINEERING CO., a corporation, *Defendant*.

No. 20,408-PH

ATLAS SCRAPER AND ENGINEERING CO., a corporation, *Plaintiff*,

v.

HARRY A. PURSCHE, an individual, *Defendant*.

ORDER: (1) Denying Motion of Atlas to alter and amend Judgment; (2) Granting Motion of Pursche to amend Judgment.

Atlas' Motion of October 21, 1963, is on two grounds: (1) a charge of inequitable conduct by Pursche and his counsel after the Court had indicated by Order of September 3, 1963 what its judgment would contain; and (2) that the provisions of the judgment effecting the transfer to Pursche of whatever rights Atlas had or has to the Chandler invention are in violation of the Anti-trust laws.

Neither ground is valid.

As to the first ground, the record shows that nothing was accomplished by Pursche or his lawyer in talking to

Chandler, and thus no harm. In addition, Atlas is adjudged guilty of fraud on Pursche in the judgment, and thus does not have clean hands.

As to the second ground [Anti-trust violation], it would be odd indeed if Atlas, adjudged guilty of fraud, could use the Anti-trust laws to protect it in the exercise of that fraud. The Anti-trust laws were made to prevent fraud, not enhance and protect it.

None of the cases cited by Atlas are sufficiently in point to be worthy of analysis.

The Motion of Pursche to amend is timely [*Continental et al v. American* (D.C. Ill. 1959) 186 F. Supp. 173, 178, 179], and it is consistent with and will aid in carrying out the Judgment of this court and the Opinion of the Court of Appeals.

Good cause appearing,

It Is Hereby Ordered that:

(1) The Motion of Atlas, filed October 21, 1963 to alter or amend the final Judgment, is denied; and,

(2) The Motion of Pursche to amend the final Judgment is granted.

Counsel for Pursche will prepare and submit a formal Order amending the Judgment.

Dated: Los Angeles, California, this 17 day of April, 1964.

PIERSON M. HALL,
United States District Judge.

First Opinion of the United States Court of Appeals for the Ninth Circuit

HARRY A. PURSCHE, *Appellant*,

v.

ATLAS SCRAPER AND ENGINEERING CO., a Corporation, *Appellee*.

ATLAS SCRAPER AND ENGINEERING CO., a Corporation, *Appellant*,

v.

HARRY A. PURSCHE, *Appellee*.

Nos. 16410, 16411.

UNITED STATES COURT OF APPEALS, NINTH CIRCUIT.

Dec. 12, 1961.

Rehearing Denied April 3, 1962.

* * * * * * *

Lyon & Lyon by Lewis E. Lyon and John B. Young, Los Angeles, Cal., for Pursche.

R. Welton Whann, Robert M. McManigal, Los Angeles, Cal., and James M. Naylor, San Francisco, Cal., for Atlas Scraper & Engineering Co.

Before BARNES, JERTBERG and KOELSCH, Circuit Judges.

KOELSCH, Circuit Judge.

Harry A. Pursche filed a complaint in the district court charging Atlas Scraper and Engineering Co. with infringement of several patents and with unfair competition. He sought an injunction and damages. Atlas answered, denying generally these charges and affirmatively alleged the usual defenses. In addition, Atlas commenced a separate suit seeking a declaratory judgment of noninfringement and invalidity of those patents. The two actions were con-

solidated and tried to the court sitting without a jury. By a single judgment covering both actions the district court decided the issues for the most part in Pursche's favor. It granted Pursche an injunction and ordered an accounting.[1] The suits are here on Atlas' appeal and Pursche's cross-appeal from the judgment.

Pursche's patents relate to a farm implement known as a "two-way" plow. The specifications of one of the patents states:

> "[T]wo-way plows have been found to be superior to the conventional one-way plow in maintaining a level field so that hills and gullies are avoided and the irrigation of the field is facilitated. One gang of plows is employed while the device is pulled across the field in one direction and when the device is returned parallel to the furrow just completed the other gang of plows is used and accordingly no gully is formed. The usual leveling operations subsequent to plowings are thereby eliminated."

Pursche was not the first to conceive a two-way plow. It was a type of plow known to the art as early as the latter half of the nineteenth century and its many advantages have caused it to be subject of considerable attention on the part of inventors, manufacturers and those engaged in farming. As might be expected, many such plows differing in construction and manner of operation have been designed and built. Some of them have been the subject of letters patent, others have not, but in any event the idea is old and the field is crowded.

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[1] The accounting has been held in abeyance pending appeal from the judgment. Jurisdiction of the interlocutory judgment in this patent suit is conferred upon this court by the provisions of 28 U.S.C.A. § 1292 which in pertinent part provides:

"The courts of appeals shall have jurisdiction from:

* * * * * * *

"(4) Judgments in civil action for patent infringement which are final except for accounting." See Patterson-Ballagh Corp. v. Moss, 201 F. 2d 403, 408 (9th Cir. 1958).

Pursche's patents are for improvements. Five of those patents are involved in this litigation, their numbers being respectively: 2,625,090; 2,625,091; 2,625,089; 2,633,786; and 2,659,284. For convenience, each patent will be referred to in the remainder of this opinion by the last three of its numbers.[2]

090 discloses the basic Pursche invention. Its principal feature, according to the finding of the district court, consists in the combination of "a frame, a longitudinal beam fixed on the frame and extended rearwardly, a plow [share] carrier mounted to turn on the longitudinal beam and provided with right and left-hand plows, and a power developing hydraulic cylinder assembly on the frame acting through a power transmitting connection to revolve the plow carrier in either direction . . . ." The 090 plow is supported by a wheel at either side and is pulled behind a tractor.

091 is essentially similar to the plow of the 090 patent except for the plow tongue. Both plows possess swinging tongues, but because of differences in construction and location the tongue of the 091 plow reduces the stress that is transmitted to the frame when the plow is towed.

089 also represents a modification of the 090 plow. The change consists principally in the location of the apparatus that serves to raise and lower the frame of the plow in relation to its side supporting wheels.

284 possesses no side supporting wheels and consists of the 090 plow converted for mounting directly upon a tractor.

786 is likewise a tractor mounted plow especially adapted for use on a Ford-Ferguson tractor; this plow is attached to the draft links and control arms with which that tractor is equipped.

Atlas is a long-time manufacturer of farm implements. Prior to 1948 Atlas had never made two-way plows but on April 3rd of that year it secured a license from Pursche, pursuant to a royalty agreement, to use the several in-

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[2] Pursche patent No. 2,655,851 and a plow of Atlas identified as a "B-2", initially involved in these suits were withdrawn from the litigation by the parties during the course of the trial.

ventions described and claimed in his patents and shortly afterwards commenced to manufacture and sell plows embodying those inventions. Atlas terminated the royalty agreement in 1952, but nevertheless continued to make and sell two-way plows hereafter referred to as the B-1, B-5 and "new-style" Atlas plows. The B-1 "new-style" plows, like the plows of the 090, 091 and 089 patents, are tractor drawn and have frames supported by side wheels; the B-5 plow, like the 786 and 284 plow, lacks side wheels and is mounted directly upon the tractor.

The district court, in its judgment, held:

(A) All of the claims of the several patents in suit valid except claim 1 of the 090 which was held invalid.

(B) The Atlas B-5 plow infringed (a) claims 3, 10, 12, 18 and 25 to 27, both inclusive, of the 090 patent; (b) claims 1 to 9 inclusive, and 12 to 15 inclusive, of the 786 patent; and (c) claims 3, 8, 10 and 15 of the 284 patent.

(C) The Atlas B-1 plow infringed (a) claims 12 through 16 both inclusive, of the 089 patent; (b) claims 2 through 27 both inclusive, of the 090 patent; and (c) claims 6 to 9 inclusive, and 14, 15 and 22 of the 091 patent.

(D) The Atlas "new style" plow did not infringe any of the claims of 090 (this being the only patent which Pursche asserted was infringed by the "new style" plow).

(E) That Pursche have judgment for unfair competition.

(F) That neither party have its costs.

The issues tendered by the appeal of each of the respective parties will be treated in the following order:

I. The validity of the five Pursche patents:

a. 090
b. 786 and 284
c. 091 and 089

II. The infringement of the Pursche patents by the Atlas plows:

a. The B-5 and B-1 plows
b. The "new-style" plows

III. Unfair competition:

a. Jurisdiction of the district court
b. Sufficiency of the evidence

IV. Miscellaneous matters:

a. Joinder of parties
b. Inequitable conduct
c. Rulings on evidence
d. Costs

[1] I. "On the major issue of validity we shall first inquire whether the conception for which the patent[s] w[ere] granted involves invention. Because of the lack of a definite rule, questions of this kind are often perplexing. It is a trite saying that invention defies definition. Yet, through long use, the word has acquired certain characteristics which at least give direction to its meaning. Invention is a concept; a thing evolved from the mind. It is not a revelation of something which exists and was unknown, but is the creation of something which did not exist before, possessing the elements of novelty and utility in kind and measure different from and greater than what the art might expect from its skilled workers." Pyrene Mfg. Co. v. Boyce, et al., 292 F. 480, 481, cert. den. 263 U.S. 723, 44 S.Ct. 231, 68 L.Ed. 525 (1923).

[2] a. The *090 Patent*. The conclusion of the district court that the plow disclosed by the 090 patent was a patentable invention rested upon the factual conclusion that the elements of the plow share carrier rotating device "performs an additional and different function in combination than they perform out of combination." The court particularly found that the component parts collectively "provide a close coupling relationship between the frame, plow carrier and hydraulic cylinder assembly which enables the operator to turn the carrier independently of forward motion and independently of the raising and lowering action and provides quick entry and exit with relation to the land with the result that the space required at the headlands for turn-

around is substantially decreased with relation to prior art devices."[3]

Atlas argues that the 090 patent was anticipated by other patents, principally those of Lindeman, Pridgen and Dexheimer. In the Lindeman patent 2,543,786, the lifting and rotating of the plow share carrier are accomplished by the same device and both operations occur simultaneously when the carrier is raised to a substantial height. Thus when the shares are disengaged from the ground, for example to avoid some obstruction in the path of the plow, the carrier revolves, bringing the opposite gang of shares into operation; in order to continue the same furrow it is then necessary for the operator to raise and lower the carrier a second time. In the Pridgen patent 2,227,366 the raising and turning operations are likewise combined. Although in the Dexheimer patent 2,609,740 the turning of the carrier may be accomplished separate from its raising, the means to accomplish this rotation differ significantly from those employed in the 090 plow in that the Dexheimer apparatus consists of a lever arrangement "partly automatic" which requires manual manipulation, while the hydraulic cylinder assembly that serves as the means to rotate the Pursche invention is fully automatic. In the Capon patent 2,426,548, although the lifting and the turning of the carrier may be separately achieved, the latter operation cannot be carried out unless the plow is pulled forward for a distance, and our examination of the record discloses no other patent for a device that combines the features of the 090 patent. In sum, the finding that the 090 plow functions in a manner that sets it apart from any device found in the prior art is borne out by the evidence.

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[3] Atlas contends that the following testimony of Pursche demonstrates that the 090 plow carrier cannot be turned without being raised.

"I don't believe it [the 090 plow] would turn over unless it was lifted, the way my plow is built."

However, in the course of his further testimony the witness stated in substance that the power cylinder on the 090 plow would probably not be strong enough to turn the plow shares while they are in the ground but that in any other position the plow carrier can readily be independently turned.

Atlas further contends that the assemblage of admittedly old elements forming the subject of the 090 patent claims are mere aggregations and not patentable combinations.

The distinction between an aggregation and a combination and tests to determine into which category a particular device falls is clearly stated by Professor Robinson in his work on Patents:

> "Where operations or instruments are thus united, one of two results must follow. Either each element remains unchanged in function and effect; or by the action of the elements upon each other, or their joint action on their common object, they perform additional functions and accomplish additional effects. The former union is a mere collocation or aggregation of the elements. Although they have been brought together in an apparent organism and rendered more available for use, they still remain the same distinct and independent means, still acting as so many separate units and not co-operating with each other to perform additional functions and accomplish additional results. Such unions, therefore, are not the creation of new means. They do not involve an exercise of the inventive faculties, nor can they be protected by a patent.
>
> . . . . . .
>
> "But when these elements are so united that by their reciprocal influence upon each other, or their joint action on their common object, they perform additional functions and accomplish additional results, the union is a true combination. While every element remains a unit, retaining its own individuality and identity as a complete and operative means, their combination embodies an entirely new idea of means, and thus becomes another unit, whose essential attributes depend on the co-operative union of the elements of which it is composed. Such a combination is a different invention from the elements themselves, whether considered in their separate or their aggregated state, the method of their co-operation in the combination being the result

of the inventive act. Whether the elements are new or old, and whether they coact successfully or simultaneously is of no importance. To unite them in a new means by the exercise of inventive skill is invention, and renders the combination, as an entirety, the subject-matter of a patent.

* * * * * * *

"This union of elemental instruments or operations in a new operation or instrument must necessarily produce effects beyond the sum of the effects producible by all the elements in their separated state. This is often the only test by which a combination can be distinguished from an aggregation, and is the one usually applied by the courts. And it is certainly reliable. For since diversity of end necessitates diversity of means, if the new combination accomplishes results that could not have been achieved either by its individual or collective elements, their union must inevitably have brought into action some new or as yet unawakened energy, which constitutes a new and independent means." Vol. 1, Robinson on Patents, sections 154, 155 and 156. (Footnotes omitted.)

[3] The distinctive feature in the 090 plow consisting of its ability to bring either of the two sets of plow shares into operative position independent of any other movement is due to the power means consisting of the hydraulic cylinder. A joint or concerted action between the cylinder and carrier occurs when the power means is activated, causing the carrier to rotate; although the joint action continues only during the interval of rotation, yet the combination made by the joint action continues as long as it needs to continue. It is not necessary that the mutual interaction of the elements be constant in order for them to constitute a combination. Lyman Mfg. Co. v. Bassick Mfg. Co., 18 F.2d 29 (6th Cir. 1927); moreover, by reason of this combined action the 090 plow is able, as the trial court found, to perform its work with greatly increased efficiency and be maneuvered in the field much more readily and with greater

facility than prior art devices. We conclude that the combination produces a new and useful result—a better means of plowing. Stearns v. Tinker & Rasor, 220 F.2d 49 (9th Cir. 1955).

Nor can we say that the combination was not the subject of a monopoly because the invention was the product of the skill of the mechanic rather than the "intuition of the inventor." National Hollow Brake-Beam Co. v. Interchangeable Brake-Beam Co., 106 F. 693 (8th Cir., 1901). For well over half a century inventors and mechanics had been striving to perfect a practical roll-over plow. In its effort to prove the invention disclosed in the 090 patent was anticipated by the prior art Atlas cited over 90 patents and publications relating to two-way plows; this is in itself cogent proof of the widespread demand for such plows and that considerable effort and attention had been devoted by many persons to improving them. Reynolds v. Whitin Machine Works, 167 F.2d 78 (4th Cir. 1948). Several types that were manufactured were abandoned and there is no evidence that the bulk of the others were ever actually put into production. Atlas marketed a considerable number of plows embodying Pursche's invention during the period the licensing agreement was in effect and since that time International Harvester Co. has discontinued its own efforts to perfect a two-way plow and under license from Pursche manufactured and sold many such plows.

> "When the indicia of invention we mention are taken into account together with the true state of the prior art and what the patent in suit accomplished to improve the art, it must be concluded that it represents [patentable] invention." The Coleman Co. v. Holly Mfg. Co., 223 F.2d 74, 80 (9th Cir. 1956).

Atlas next attacks *each of the several claims* of the 090 patent on a number of grounds. In considering them we will follow Atlas' lead and separate the claims into two groups, discussing first what Atlas refers to as the "broad" claims and second, the "narrower" claims.

[4] Falling into the first group are claims 1 through 5, 10, 12, 14, 17, 18, 19 and 25 through 27.

Atlas urges that none of the claims in this first group complies with the statutory requirement that a claim must distinctly describe and particularly point out the invention. It appears from the patent that claims 1 through 5, 10, 14, 17, 18, 19, 25 and 26 variously state that the plow is equipped with "means on the frame adapted to turn the carrier" or "power means on the frame adapted to turn the carrier." Such broad and general descriptions apply equally to all mechanisms including the one found in the Capon patent which consists of gears connected to the wheels rather than the hydraulic turning mechanism possessed by 090. The phrase "power means" merely suggests the use of mechanical energy as opposed to manual energy and describes generally the mechanism of both plows.

With one exception all the other parts described in these claims can also be found in the Capon plow. Some of the claims, in addition to the rotating carrier, describe a tail wheel which runs on unplowed ground. The Capon plow did not possess such a wheel. However, the Unterilp patent, another member of the prior art, shows a plow with a wheel on the plow carrier attached like the one on 090.[4] "It is not necessary that all of the elements of the claim be found in one prior patent. If they are all found in different prior patents and no new functional relationship arises from the combination, the claim cannot be sustained." Eagle v. P. & C. Hand Forged Tool Co., 74 F. 2d 918, 920 (9th Cir. 1935).

Since no new function nor any surprising or unusual circumstances would arise from placing the Unterilp tail wheel on the plow described in the Capon patent, we conclude that claims 1 to 5, 10, 14, 17, 18, 19, 25 and 26 of the 090 patent are invalid for they merely reiterate what already existed in the prior art.[5]

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[4] The Unterilp plow is disclosed in a German patent No. 49222 issued in 1889.

[5] The district court found that claim 1 of 090 was invalid because of its failure to include the longitudinal beam upon which the plow carrier is mounted to turn.

However, claims 12 and 27 point out specifically that the power means incorporated with the carrier to effect its rotation is a hydraulic cylinder assembly. This detailed description distinguishes these claims from the generality of the others and excludes the Capon and Unterilp plows from their limited scope.[6]

It is next urged that claims 12 and 27 are each invalid for their failure to set out what Atlas deems to be all the essential elements required to constitute 090 an operative machine.[7] We are directed to Goodman v. Super Mold Corp. of California, 103 F. 2d 474 (9th Cir. 1939), as au-

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[6] Claim 12 of 090 reads:

"In a two-way plow assembly, the combination of a stationary beam member extending longitudinally in the direction of normal movement of the plow assembly, a carrier turnably mounted on said beam member between the ends thereof and provided with a right hand plow and a left hand plow, a cross member fixed relative to said beam member at a position in advance of said carrier and plows, means including a hydraulic power cylinder carried on the cross member for turning the carrier to bring either plow into operative position, and lift means connected with cross member for lifting the entire length of the beam member and thereby raising the carrier and plows out of ground-engaging position.

Claim 27 of 090 reads:

"In a two-way plow assembly, the combination of: a frame, a stationary longitudinal beam member fixed on and extending rearwardly from the frame, a carrier turnably mounted on the beam member and provided with ground-engaging plow means for producing a right-hand furrow or a left-hand furrow, power means for turning the carrier relative to the beam member including a torque receiving element fixed on the forward end of said carrier, a hydraulic power cylinder assembly mounted on the frame and having a power element movable in a plane normal to said beam member, and means including an intermediate power transmitting element operatively interposed between the power element and the torque receiving element, whereby the power cylinder assembly may turn the carrier in either direction."

[7] The following are the twelve parts which Atlas states must be included in order to make an operative construction: (1) a frame, (2) side-supporting wheels, (3) a means for raising and lowering the frame relative to the wheels, (4) a horizontally swingable tongue, (5) a means for shifting the tongue, (6) a longitudinal beam, (7) a carrier, (8) right and left hand plows, (9) a rotating means, (10) a thrust collar, (11) a stop to arrest rotation of carrier, and (12) a rear supporting wheel.

thority for the proposition that a claim is invalid unless it teaches the entire machine. We do not so read that case. There the court had under consideration the validity of a number of claims contained in a patent for a machine to retread worn automobile tires. Specifications and drawings of the machine as shown in the patent disclosed the device constituting the purported invention consisting of two rings, one on either side of the tire. These rings served to press the tire against the mold that comprised one of the components of the entire machine. But the claim relating to this particular device omitted from its description one of the two rings. In sustaining the attack that this claim was incomplete within the meaning of 35 U.S.C.A. § 33 (now 35 U.S.C.A. § 112) the court observed that the operation of that particular device "depend[ed] upon the combination with a ring on each side of the tire. The patent d[id] not teach the use of a single ring * * *." That claim was held incomplete not because of its failure to describe the entire retreading machine in which the rings were incorporated, but because of the omission from the claim of one of the essential parts that rendered that particular device functional.[8]

[5] It has long been recognized that claims for combinations and also subcombinations may be validly allowed by the patent office (Special Equipment Co. v. Coe, 324 U.S. 370, 377, 65 S.Ct. 741, 89 L.Ed. 1006 (1945)), and that a claim need not include all the elements necessary to make up a complete operative device. Deering v. Winona Harvester Works, 155 U.S. 286, 302, 15 S.Ct. 118, 39 L.Ed. 153 (1894); Clark Blade and Razor Co. v. Gillette Safety Razor Co., 194 F. 421, 423 (3rd Cir. 1912); Walker on Patents, Vol. 2, sec. 166; Ellis' Patent Claims, sec. 139. The applicable rule is well stated in Ellis' Patent Claims on page 168:

> "Every claim need not include all novel elements in the machine. All that is required is that each claim covers a patentable invention. A complete machine may embody numerous inventions, the number of which

[8] One of the other claims calling for both rings was held valid and infringed.

depends on how many combinations and permutations of elements, each patentable per se, are included in the entire machine. A claim, therefore, need not include elements not essential to the definition of the particular invention that claim is drawn to cover."

The rule and the rationale given by the Supreme Court stated in Deering v. Winona Harvester Works, 155 U.S. at 302 is this, 15 S.Ct. at 124:

> "Admitting that additional elements are necessary to render the device operative, it does not necessarily follow that the omission of these elements invalidates the claim, or that the precise elements described in the patent as rendering it operative must be read into the claim. * * * Otherwise the infringer might take the most important part of a new invention and, by changing the method of adapting it to the machine to which it is an improvement, avoid the charge of infringement."

In the instant case, claims 12 and 27 of the 090 patent set out all the necessary parts of a patentable combination.

[6, 7] Nor do any of the remaining attacks on these two claims have merit. Under the doctrine of "late claiming" as exemplified in such cases as Muncie Gear Works v. Outboard Marine & Mfg. Co., 315 U.S. 759, 62 S. Ct. 865, 86 L.Ed. 1171 (1942), a supplemental claim adding new matter to a pending patent application is invalid where intervening use or sale of a device described in the supplemental claim occurred more than one year prior to the filing of that claim. 35 U.S.C.A. § 102(b). It is true that in this case the 090 plow had been in public use for nearly four years before Pursche supplemented his pending patent application with claim 27. But the scope of the invention stated in several claims initially made in that application extended to and included the matter covered in claim 27. Claim 27 added nothing new to the application.

[8] Nor is the claim invalid for overclaiming. Pursche

is not, as Atlas apparently believes, claiming an improvement to a turning means that is old in the art, but instead is claiming what we have already determined is an entirely new combination that performs a new function over prior art devices. Thus the rule in Lincoln Engineering Co. of Illinois v. Stewart-Warner Corp., 303 U.S. 545, 549, 58 S.Ct. 662, 664, 82 L.Ed. 1008 (1938) that: "* * * the improvement of one part of an old combination gives no right to claim that improvement in combination with other old parts which perform no new function in the combination" has no application. Rather, the correct principle is the one stated in Expanded Metal Co. v. Bradford, 214 U.S. 366, 381, 29 S.Ct. 652, 656, 53 L.Ed. 1034 (1909):

> "It is perfectly well settled that a new combination of elements, old in themselves, but which produce a new and useful result, entitles the inventor to the protection of a patent."

The second group of claims which Atlas attacks is comprised of claims 6 to 9, 11, 13, 15, 16, and 20 to 24 of the 090 patent. All these claims except 11, 13 and 15 relate not only to the rotating of the carrier, but also to the lateral shifting of the tongue used to draw the plow. They teach that the carrier is turned and the tongue shifted simultaneously by reason of the interconnection of the respective hydraulic cylinder power means which jointly operate both tongue and carrier.

Atlas urges that even if some "improvement, change or added feature" which might constitute a patentable novelty is present in any claim that, nevertheless such claim indiscriminately includes and comprehends * combinations known to the prior art and fails to point out and clearly claim the particular subject of the patent.

Atlas relies on Evans v. Eaton, 7 Wheat. 356, 20 U.S. 356, 5 L.Ed. 472 (1822); there a patentee claimed the whole of a machine called a "hopper boy" employed in the manufacture of flour, although his invention merely related to

an improvement of a part of the entire machine. The Supreme Court struck down the claim, saying at page 430:

> "If the same combinations existed before, in machines of the same nature, up to a certain point, and the party's invention consists in adding some new machinery, or some improved mode of operation, to the old, the patent should be limited to such improvement, for if it includes the whole machinery, it includes more than his invention, and therefore, cannot be supported."

[9, 10] But this principle is not applicable for here the patent, although teaching a machine that is made up of parts found by the trial court to be old in the art, combines those parts in a way that results in a substantially new and different machine. The only evidence in the record to the effect that any single prior art device anticipated the interconnecting power means claimed by Pursche consists of this passage appearing in a German patent issued to one Weylmuller in 1941:

> "Finally, there is still another known device whereby the unbolting and the rotating of the Grindel and of the plow body chassis are affected by the driving power of the towing motor and the pulling shaft is shifted as a result of its firm connection with the Grindel which is produced by means of a Cardonic suspension and a chain."[9]

This casual and vague reference amounting at most to an opinion of the patent officer of a foreign country regarding the operation of some device but lacking any description of its construction cannot be considered substantial evidence on the issue of anticipation.

> "An American patent is not anticipated by a prior foreign patent, unless the latter exhibits the invention in such full, clear, and exact terms as to enable any

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[9] After searching the briefs, the record and the numerous dictionaries for an explanation of the word "Grindel" we have remained unenlightened as to its meaning.

person skilled in the art to practice it without the necessity of making experiments." Carson v. American Smelting & Refining Co., 4 F.2d 463, 465 (9th Cir. 1925).

Similarly, a survey of the entire field demonstrates that Pursche's plow is not a mere aggregation of some or all of the many prior art devices. Dissecting old machines, taking elements from each and verbally constructing the Pursche 090 plow does not aid Atlas for Pursche is not claiming as his invention the individual parts but their new relationship together which achieves what the district court found to be the answer to the need in the two-way plow art.[10]

Atlas argues that claims 11 and 13 of the patent are misdescriptive in that they describe the "lift means" for raising and lowering the plow share carrier as "connected with the cross-member" of the plow frame, whereas the drawings that accompany the patent show the "lift means" are not attached to the cross-members but instead are

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[10] In regard to the "narrower claims" our survey of the prior art has included:

UNITED STATES PATENTS

Number	Name	Date
120,572	Chapman	1871
123,330	Chapman	1872
1,189,524	Baal	1916
1,908,095	York	1933
2,187,380	Kaltoft	1940
2,269,502	Wilson	1942
2,316,397	Briscoe	1943
2,327,927	Orelind	1943
2,410,918	Acton	1944
2,426,548	Capon	1947

FOREIGN PATENTS

Number	Country	Name	Date
49,222	Germany	Unterilp	1889
468,127	Great Britain	Melotte	1937
494,750	Great Britain	Melotte	1937
715,047	Germany	Weylmuller	1941

UNPATENTED DEVICES

Atlas Scraper Wagon
Improved "Tumblebug" plow

fastened to the side members of the frame. We think the argument is not only patently tenuous but requires a hypercritical reading of the claims. If by "lift means" Pursche meant the device that serves to raise the carrier rather than the mode of performing the raising and lowering function, nevertheless the "lift means" are attached to the side members of the frame of the plow and these side members in turn are attached to the cross-member designated in the two claims.[11] Although the "lifting means" are not directly connected to the cross-member they are joined to it by that intermediate connection, and are therefore "connected with the cross-member."

[11] Moreover, as a legal proposition the argument is likewise unsound; every embodiment of an invention need not be described in the specifications nor illustrated by the drawings in a patent so long as the form of the device is not the principle of the invention.

> "It is enough if the invention be described together with that mode which is conceived to be the best for putting it into practical use; and where that has been done, the patent is not confined to the precise mode outlined." Chicago Pneumatic Tool Co. v. Hughes Tool Co., 97 F.2d 945, 946 (10th Cir. 1928); see also, Cameron Iron Works v. Stekoll, 242 F.2d 17, 20 (5th Cir. 1957).

Conversely stated, the claims need not set out the exact same structures as are shown in the drawing or described in the specifications so long as the differences between them do not encompass the invention itself.

The essential features of the invention are stated

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[11] 35 U.S.C.A. § 112 in part reads as follows:

"The specification shall contain • • •.

"The specification shall conclude with one or more claims • • •.

"An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof."

whether the "lifting means" is directly or remotely connected to the cross-member.

[12] I. b. *The 786 and 284 patents.* Atlas attacks both the 786 and 284 patents on numerous grounds, the first being that they violate the rule against double patenting.[12]

The district court found that the elements comprising the plowing assembly of the 784 and 284 plows as well as the 090 plow patents are essentially the same and are embraced in the claims of all three patents but nevertheless concluded that what was claimed in both 786 and 284 was patentable invention.[13] The inventive feature in the 786 patent was found to exist in the "hitch mounting for a 'Ford-Ferguson' type tractor with power draft links and * * * construction wherein the weight of the two-way plow assembly is effective to assist in turning the plow carrier on the longitudinal beam of the frame" while in the 284 patent the district court concluded that the invention lay in the "direct mounting connection for a two-way plow for support on the rear of a tractor, the support means on the plow being mounted at opposed ends of a cross-member of the frame, thereby producing a close-coupling connection to minimize rearward extension of the parts of the plow and thereby minimize 'bucking' or undesirable lifting of the front end of the tractor."

Pursche concedes that claims 12 and 27 of the 090 patent read squarely on the disclosures contained both in the 786

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[12] "* * * two valid patents for the same invention cannot be granted either to the same or to a different party." Miller v. Eagle Co., 151 U.S. 186 at 197, 14 S.Ct. 310, 314, 38 L.Ed. 121 (1893).

[13] Finding 12 reads in part:

> "Each of the two-way plows constructed by the party Harry A. Pursche and as shown in the drawings of Patent Nos. * * * 090, * * * 786 and * * * 284 included a frame having a longitudinal beam, a carrier mounted to turn on the beam, right and left hand plows hydraulic 180° apart on the carrier, and hydraulic power beams mounted transversely on the frame adjacent the forward end of the carrier for turning the carrier on the longitudinal beam to bring either of the plows into operative position. Each plow device also included a thrust collar mounted at the rear end of the longitudinal beam for applying draft force to the carrier. * * *"

and the 284 patents, but he points out that the plows in the latter two patents are tractor mounted rather than wheel supported; he also notes that because of this difference the claims in the latter two patents on which 090 reads include means for attaching the plows to tractors which the 090 patent does not possess and he argues that since the claims of 786 and 284 do not read on 090 they must be held valid.

It is true that some of the elements making up the combinations claimed in 284 and 786 are not present in the claims of 090. Nevertheless, this does not necessarily conclude the issue; "* * * mutual cross reading of the claims of an application and patent may be a factor in determining whether double patenting exists; but it is not indispensable to a holding of double patenting. * * * It is axiomatic that if two patents are to be granted there must be two inventions present." Application of Ward, 236 F.2d 428 at 432 (43 CCPA 1956, 1007).

In the case at hand the claims of 786 and 284 patents embrace the actual plowing assembly which was the subject of the claims of the 090 patent plus the means by which the plowing assembly is attached to the towing vehicle. However, members of the prior art similarly attached their plowing assemblies directly to the rear of the tractors and clearly anticipate the means for doing so claimed in the 786 and 284 patents.[14] When this is added to the fact that Pursche had already received protection for his assembly of parts which actually perform the plowing, the conclusion that 786 and 284 are not inventive, becomes inescapable. Application of Asseff, 173 F.2d 253 (36 CCPA 1949, 867); Oliver-Sherwood Co. v. Patterson-Ballagh Corp., 95 F.2d 70, 78 (9th Cir. 1938).

We are, of course, aware that the applications for the 786 and 284 patents were co-pending with, but issued several months later than, the 090 patent, and that while co-pending applications "* * * are not technical references in the sense that a timely granted patent to a third person might have been, it is * * * perfectly proper

[14] The Ferguson patent, No. 2,223,002; the Lindeman patent, No. 2,543,786; and the Dexheimer patent, No. 2,609,740.

to look to them for what they claim, and when two applications are presented to by an inventor it is proper 'to hold the one unpatentable in view of the prior art and the claims upon which the other was patented.'" In Re Mason, 62 F.2d 185, 187 (20 CCPA 1932, 782).

Nor is the turning of the carrier through the use of its own weight (as claimed in 786) or the minimization of the bucking of the tractor by the relocation of the plowing assembly (as claimed in 284) such an unusual or surprising consequence as to elevate the aggregation of old elements to the level of patentable invention. Great Atlantic & Pacific Tea Co. v. Supermarket Corp., 340 U.S. 147, 152, 71 S.Ct. 127, 95 L.Ed 162 (1950).

This conclusion makes it unnecessary to discuss any of the Atlas remaining points regarding these two patents.

I. c. *Patents 091 and 089.* The district court held that claims 6 to 9 inclusive, 14, 15 and 22 of the 091 patent and claims 12 to 16 inclusive of the 089 patent were valid. But Atlas argues that both patents violated the rule against double patenting as expressed in McCreary v. Pennsylvania Canal Co., 141 U.S. 459, 467, 12 S.Ct. 40, 43, 35 L.Ed. 817 (1891):

> "It is true that the combination of the earlier patent in this case is substantially contained in the later. If it be identical with it, or only a colorable variation from it, the second patent would be void as a patentee cannot take out two patents for the same invention."
>
> "The rule against double patenting is based upon the idea that the power to create a monopoly is exhausted by the first patent, and that a new and later patent * * * would operate to extend or prolong the monopoly beyond the period allowed by law." J. R. Clark Company et al. v. Jones & Laughlin Steel Corp., 288 F.2d 279, 281 (7th Cir. 1961).

Illustrative of situations where this rule is applied are Miller v. Eagle Mfg. Co., 151 U.S. 186, 14 S.Ct. 310, 38 L. Ed. 121 (1894) and Weatherhead Co. v. Drillmaster Supply Co., 227 F.2d 98 (7th Cir. 1955). In both those cases a second patent issued for essentially the same invention

was held void. In each instance the facts as set out in the opinions disclosed that the patent struck down had been issued several months after the first; to uphold the second patent as valid would have unduly extended the patentee's monopoly. But the facts in the instant case are significantly different from those in Miller and Weatherhead.

[13, 14] Patents 090, 091 and 089, their applications being filed in that chronological order, were all issued to Pursche on the same date—January 13, 1953 and they both refer to 090 and expressly state that they extend to "improvements" on the invention embodied in 090.[15] Unless void because they violate the rule, the two later filed patents will expire at the same time as the 090. There would be no extension of the patent monopoly. The decisions on this point are to the effect that the rule will not operate where the reason for its application is absent. A typical statement appears in Theroz Co. v. United States Ind. Chemical Co., Inc., 14 F.2d 629, 640 (D.C.Md.1926), aff'd 25 F.2d 387:

> "Since the patentee is the same in both instances, the second • • • patent is not invalidated by the application for the first. Deister Concentrator Co. v. Deister Machine Co., (C.C.A.) 263 F. [706,] 710. It is true in the case at bar, as in the case cited, that, although the claims in the second patent might have been joined with the claims of the first, no damage to the public resulted from their separate presenta-

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[15] In the first paragraph of the specifications of the 091 patent Pursche said:

> "This invention relates to a two-way plow and is particularly directed to improvements over the construction disclosed in my co-pending application • • • [for patent 090]."

In the corresponding paragraph in the 080 patent he likewise said:

> "This invention relates to agricultural implements and is particularly directed to improvements in a two-way plow. The present invention relates generally to the type of plows illustrated in my co-pending applications • • • [091] filed July 14, 1947 and • • • [089] filed July 17, 1947."

tion, in view of their simultaneous issuance, and it is quite clear that no fraud was practiced or intended by the applicant." See also, J. R. Clark Co. v. Jones & Laughlin Steel Corp., supra.

We agree with the statement last quoted and find it applicable here. We conclude that claims 6 to 9, 14, 15 and 22 of the 091 patent, and claims 12 to 16 inclusive of the 089 patent are valid.[16]

II. The infringement of the Pursche patents by Atlas plows:

a. *The B-5 and B-1 plows.* The district court, as previously mentioned, held Pursche's patents valid and concluded Atlas' B-1 and B-5 plows infringed them; except as to several claims of Pursche's patent, which were held to be infringed by the B-5 plow, Atlas did not specify the court's rulings as errors. Rather, Atlas urged on appeal that the Pursche patents were invalid and sought on that basis to avoid liability on the doctrine that there can be no infringement of an invalid patent. Hoover Co. v. Mitchell Mfg. Co., 269 F.2d 795 (7th Cir. 1959); Bergman v. Aluminum Lock Shingle Corp., 251 F.2d 801 (9th Cir. 1958). It follows that so far as we have concluded the claims of the Pursche patents were valid. Atlas has conceded their infringement by his B-1 and B-5 plows; the only matter presented to us is whether the B-5 plow infringes the 786 patent; but this requires no discussion since we have held that the 786 patent was anticipated by the prior art and cannot stand.

[15, 16] b. *The Atlas "new style" plow.* The question considered under this heading is whether the "new style" plow infringed Pursche's 090 patent and is tendered by Pursche's cross-appeal.

The term "new style" plow refers to four plows manu-

[16] Atlas has attacked these claims with the same arguments which he used against the "narrow" claims of 090, namely, that they are anticipated by the prior art, are mere aggregations, and that they overclaim their inventions. However, what we said in sustaining the validity of the "narrow" claims of 090 applies equally here.

factured by Atlas and designated in the record as its "B-3, B-4, B-6 and B-7" models. These four plows possessed common characteristics, were constructed substantially alike, and are referred to by the parties as the Atlas "new style" plow. For convenience, we too will adopt that designation.[17]

The district court held the "new style" plow did not infringe the 090 patent; its conclusion was predicated upon the finding that the "new style" plow "* * * works differently [from the plow in the 090 patent], particularly with the two wheels riding on the unplowed ground and particularly with the eccentric mounting of the plows." We conclude that this finding is supported by substantial evidence.[18] Graver Tank & Mfg. Co. v. Linde, 339 U.S. 605, 609, 610, 70 S.Ct. 854, 94 L.Ed. 1097 (1950); Moon v. Cabot Shops, Inc., 270 F.2d 539 (9th Cir. 1959).

[17] Atlas concedes that the claims of the 090 plow read on the "new style" plow, but this is not conclusive on the question of infringement. "Infringement is not a mere matter of words." Grant v. Koppl, 99 F.2d 106, 110 (9th Cir. 1938). In order to constitute infringement there must also exist substantial identity of function, means, and result. Martin v. Ford Alexander Corp., 160 F.Supp. 670 (D.C.S.D.Calif.1958). The turning of the carrier in the respective plows is effected in the same manner and to that extent plows are similar in their mode of operation, but nevertheless, the mechanical construction of the carriers of the two plows differs in material respects. All the shares on the Pursche plow are located within the track of the side supporting wheels of the frame, while in the "new style" plow the farthermost share of the several comprising each gang of plows extends

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[17] There is another Atlas plow known as the B-2 model, but this was withdrawn from the litigation by stipulation of the parties.

[18] We are aware that a patent was granted for the combination comprising the "new style" plow, but we put that fact aside. Although the granting of a patent carries with it a presumption that the invention claimed there is patentable there is no presumption that the invention does not infringe an earlier issued patent. Jonas v. Roberti, 7 F. 2d 563 (9th Cir. 1925); Bake-Rite Mfg. Co. v. Tomlinson, 16 F. 2d 566 (9th Cir. 1926).

beyond the outer side of either wheel. The shares in both machines lie to the rear of the wheels. Thus, when the plows operate, one wheel of the 090 plow runs in plowed ground and the other rests on unplowed ground whereas both wheels of the "new style" plow travel on unplowed ground. According to the expert witnesses substantial advantages resulted to the "new style" plow because of this difference: the "new style" plow is able to obtain full furrow depth on the first run but the Pursche plow requires three to five passes to do so; the Atlas plow runs evenly whereas in the Pursche plow unevenness frequently occurs due to clods of earth falling into the furrow in which the wheel is traveling; the Atlas plow can readily straighten the furrow but since the wheel of the Pursche plow "tracks" in the furrow this operation in the latter plow might require "fifteen to twenty rounds to get that field straightened out again. It is a very difficult problem."

The district judge, in his role of fact-finder, had the two plows before him and at a demonstration observed them in operation; he was in much better position than we to determine whether the testimony was borne out and we cannot conclude that his conclusion was erroneous.

III. *Unfair Competition.*

Atlas attacks the judgment of the district court determining it was guilty of unfair competition. It urges two grounds for reversal: (a) lack of jurisdiction of the district court over the subject matter, and (b) insufficiency of the evidence to support the judgment.

a. Both parties are citizens and residents of the State of California and therefore jurisdiction of the district court to entertain the claim must be rested (if it existed at all) on 28 U.S.C.A. § 1338(b). That subsection provides:

> "The district court shall have original jurisdiction of any civil action asserting a claim of unfair competition when joined with a substantial and related claim under the copyright, patent or trademark laws."

Atlas argues first that the claim in question is not one of unfair competition and second that it is not "related" to the claim for the alleged infringement as required by the statute. The contention advanced is that unfair competition is a tort consisting of the violation of a duty rather than the breach of a consensual agreement; that the gist of Porsche's claim is Atlas' breach of promise contained in the royalty license agreement rather than the omission of any duty with the result that the dependent claim does not constitute the tort of "unfair competition." However, the gravamen of Porsche's dependent claim is not Atlas' breach of contract, but rather the activity that followed the breach, more specifically, the utilization and sale of devices which Atlas was able to manufacture because of the knowledge it had received from Porsche's confidential disclosures and from the improvements to which Porsche was allegedly entitled under the licensing agreement.

The Supreme Court in A. L. A. Schechter Poultry Corp. v. United States, 295 U.S. 495 at page 531, 55 S.Ct. 837, 844, 79 L.Ed. 1570 (1935), recognized that: " 'Unfair competition,' as known to the common law, is a limited concept. Primarily, and strictly, it relates to the palming off of one's goods as those of a rival trader. * * * In recent years, its scope has been extended. It has been held to apply to misappropriation as well as misrepresentation, to the selling of another's goods as one's own,—to misappropriation of what equitably belongs to a competitor. * * * Unfairness in competition has been predicated of acts which lie outside the ordinary course of business and are tainted by fraud, or coercion, or conduct otherwise prohibited by law."

[18] Atlas' right to manufacture and sell plows embodying Porsche's inventions and improvements ceased upon the termination of the licensing agreement. If Atlas thereafter continued to make use of Porsche's property in its business, this constituted unfair competition within the meaning of section 1338(b). Schreyer v. Casco Products Corp., 190 F.2d 921 (2d Cir. 1951).[19]

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[19] We do not reach the question whether a breach of contract can also be unfair competition. But see, Telechron, Inc. v. Parissi, 197 F. 2d

On the issue of lack of jurisdiction Atlas further argues that the facts on which the claims of infringement and unfair competition are grounded are not the same and that therefore 28 U.S.C.A. § 1338(b) cannot operate to permit the joinder of the two claims.

[19] There is some conflict among the circuits over the construction of the phrase, "related claim" appearing in this statute; some require that "both the federal and non-federal causes rest on substantially identical facts," (Powder Power Tool Corp. v. Power Actuated Tool Co., 230 F.2d 409, 413 (7th Cir. 1956); Landstrom v. Thorpe, 189 F.2d 46 at 51 (8th Cir. 1951)) while others are satisfied if there exists a "considerable overlap in their factual basis" and if a substantial amount of the evidence of one claim be relevant to the other. Maternally Yours v. Your Maternity Shop, 234 F.2d 538 at 544 (2d Cir. 1956); Lyon v. Quality Courts United, 249 F.2d 790 at 795 (6th Cir. 1957); see also, Moore's Federal Practice, Vol. 1, pages 658 to 659.[20]

> "In construing the sections of title 28 weight should be given to the reviser's notes which were included in the committee reports when the legislation was before Congress. [Citations omitted.] The reviser's note to § 1338 states:
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> "Subsection (b) is added and is intended to avoid 'piecemeal' litigation to enforce common-law and statutory copyright, patent and trademark rights by specifically permitting such enforcement in a single civil action in the district court." [21] Stauffer v. Exley, 184 F.2d 962 at 964 (9th Cir. 1950).

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757 (2d Cir. 1952); and Judge Clarke's dissenting opinion in Kleinman v. Betty Dain Creations, 189 F. 2d 546 (2d Cir. 1951).

[20] The Second and Sixth Circuits once followed the stricter view. See Kleinman v. Betty Dain Creations, Inc., supra, and French Renovating Co. v. Ray Renovating Co., 170 F. 2d 945, 947 (6th Cir. 1948).

[21] See Judge Clarke's dissent in Kleinman v. Betty Dain Creations, Inc., supra, at page 551, of 189 F. 2d fn. 6.

[20] We conclude that the more liberal construction of this statute exemplified by the Maternally Yours and Lyon decisions better serves to attain the legislative purpose than the more restrictive construction reflected in Landstrom v. Thorpe, supra, and that the instant case is of the type to which section 1338 (b) applies. Unlike Dubil v. Rayford Camp & Co., 184 F.2d 899 (9th Cir. 1950), where the operative facts were found to be "very different" the claims of infringement and unfair competition in the instant case have a common background with much of the evidence being pertinent to both.

[21] III. b. We turn next to questions concerning the sufficiency of the evidence to support the findings of the trial court that Atlas competed unfairly with Pursche.

The licensing agreement contained, among others, the provision that to the extent of Atlas' interest therein, all improvements, modifications and betterments to Pursche's inventions which Atlas conceded were acquired while the agreement was in force, belonged to Pursche; it further provided that Atlas should promptly disclose and transfer by proper assignment all such inventions to Pursche.

The essence of the claim of unfair competition is Atlas' wrongful concealment of information concerning improvements made to the Pursche plows by its employee, Roy L. Chandler.

Chandler was orally hired by Atlas in November 1950 and continued in that employment for nearly six years. During this period he filed applications for patents embodying three inventions relating to two-way plows and joined with one Claude B. Ogle Jr. in applying for a fourth. Thus on May 29, 1952, Chandler applied for a patent for a gear type device to turn the plow share carrier on the longitudinal beam; in 1953 he applied for patents covering two more inventions, both consisting of new types of tail wheels referred to as the "butterfly tail wheel" and the "chain type tail wheel." In 1954 Chandler and Ogle jointly sought a patent for a plow which incorporated the gear-type turning device of his former application.[22]

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[22] Patents for these inventions were thereafter issued, their respective numbers being 2,817,241; 2,842,038; 2,773,439; and 2,830,519.

Pursche's claim of unfair competition has merit only if Atlas was entitled to the improvements and betterments reflected in those patents. This, in turn, dependent on the terms of Chandler's employment by Atlas. If Chandler was hired for the express purpose of originating for his employer's benefit, inventions relating to two-way plows, then Atlas was entitled to any such invention. Standard Parts Co. v. Peck, 264 U.S. 52, 44 S.Ct. 239, 68 L.Ed. 560 (1923). Similarly, if though not initially employed for the purpose of exercising his inventive ability for his employer, Chandler nevertheless was thereafter directed to devote his talents to that end, then the product of his later efforts likewise was the property of Atlas. Forberg v. Servel, Inc., 88 F.Supp. 503 (D.C.S.D.N.Y.1949). Conversely, if Chandler's employment was general then Atlas was not entitled to his inventions but at most acquired a shop right or license to use as distinguished from the ownership or right to ownership of the inventions.[23] And since a "shop-right" is personal to the employer and cannot be the subject of transfer to another (Hapgood v. Hewitt, 119 U.S. 226, 7 S.Ct. 193, 30 L.Ed. 369 (1886)), no right of Atlas to the invention could pass to Pursche by virtue of the licensing agreement.

The district court found that the two tail wheels in the gear type roll-over mechanism disclosed and described in the several Chandler patents "were improvements, modifications and betterments upon the Pursche plows and were made or conceived within the terms of the license agreement * * * and were made within the provision of said agreement and through the efforts and under the control of the party Atlas * * * and its employee, Roy L. Chandler." It further found that "said inventions, improvements, modifications and betterments of Roy L. Chandler were made in the course of his employment as an engineer and designer

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[23] "* * * the so-called shop-right * * * shortly stated, is that where a servant, during his hours of employment, working with his master's materials and appliances, conceives and perfects an invention for which he obtains a patent, he must accord his master, a nonexclusive right to practice the invention." United States v. Dubilier Condenser Corp., 289 U.S. 178, at 188, 53 S.Ct. 554, 558, 77 L. Ed. 1114 (1932). See also, Consolidated-Vultee Aircraft Corp. v. Garbell, 204 F. 2d 946 (9th Cir. 1953).

while working on projects assigned to him by the management of the party Atlas. * * * And that * * * Atlas concealed from the party Harry A. Pursche development activities of its employee Roy L. Chandler in two-way plows." On the basis of these findings the district court concluded that the concealment of the improvements made by Chandler and their continued use by Atlas "did and does constitute unfair competition as to the party Harry A. Pursche."

Atlas makes a dual attack on the court's findings; first, it vigorously argues that all the evidence was to the effect that Chandler was hired by Atlas as a detail draftsman under a general contract of employment and not as an engineer and designer and that at no time pertinent to the development of his inventions was Chandler directed or commissioned by Atlas to make any improvements to two-way plows for Atlas' benefit. Secondly, Atlas contends that regardless of the nature of Chandler's employment and contrary to the court's finding that all three of the devices whose use by Atlas was held to constitute unfair competition, the evidence conclusively demonstrates that two of those inventions were made and conceived long after the licensing agreement was terminated.

Atlas makes a persuasive argument. The court's findings were contrary to the direct testimony on the subject, but this evidence was all adduced from interested witnesses and was countered by substantial mute evidence from which the facts found by the trial court can be inferred. We are not convinced that the several findings of the district court are "clearly erroneous" as that term is defined in the much cited case of United States v. United States Gypsum Co., 333 U.S. 364 at 395, 68 S.Ct. 525, 92 L.Ed. 746 (1948).

IV. Miscellaneous matters:

[22] a. *Joinder of parties.* Atlas next asserts that the district court injunction prohibiting Atlas from competing unfairly with Pursche by using the Chandler patents has deprived Chandler of property in violation of the due process clause of the federal constitution. Chandler was not named as a party to either of these suits but it appeared during the trial that shortly before that time he had granted

Atlas an exclusive license on a royalty basis to practice his three inventions; no royalties will accrue to Chandler unless Atlas uses those inventions.

Atlas does not elaborate upon its argument nor refer us to any statute or case law relating to a situation of this sort but from the statements appearing in its brief we construe the contention to be that Chandler was an indispensable party to the litigation.[24] See 41 Yale Law Journal 1241 at 1242.

In State of Washington v. United States, 87 F.2d 421, 427 (9th Cir. 1936), this court declared that a person not party to the suit who was interested in the controversy and whose interest was such that a decree could not be made without adversely affecting that interest, was an indispensable party; it also stated that the non-joinder of an indispensable party is a fatal error and the court cannot proceed to a decree in the absence of such indispensable party. It follows as a necessary corollary that a decree entered by the district court in the absence of an indispensable party must be set aside on appeal. McShan v. Sherrill, 283 F.2d 462 (9th Cir. 1960).

But we are of the opinion that Chandler had no interest in the controversy requiring his joinder as a party. The injunction was directed against Atlas to prevent conduct that was tortious because it violated a duty arising from an agreement entered into between Porsche and Atlas; Chandler was not party to that agreement, gained no rights through it nor did the decree upon which the injunction issued adjudicate any right of Chandler derived from his own separate agreement with Atlas.

Ordinarily where the rights involved in litigation arise upon a contract, courts refuse to adjudicate the rights of some of the parties to the contract if the others are not before it. Shields v. Barrow, 17 How. 129, 140, 58 U.S. 129, 15 L.Ed. 158; Carroll v. New York Life Ins. Co., 8 Cir., 94 F.2d 333; cf. Waterman v. Canal-Louisiana Bank Co.,

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[24] The objection to the trial proceeding without Chandler was not made in the trial court but was raised the first time on appeal; but nevertheless Atlas may still urge the matter. McShan v. Sherrill, 283 F.2d 462 (9th Cir. 1960).

215 U.S. 33, 48, 30 S.Ct. 10, 54 L.Ed. 80. Such a judgment or decree would be futile, if rendered, since the contract rights asserted by those present in the litigation could neither be defined, aided nor enforced by a decree which did not bind those not present.

> "But different considerations may apply even in private litigation where the rights asserted arise independently of any contract which an adverse party may have made with another, not a party to the suit, even though their assertion may affect the liability of the former to fulfill his contract. The rights asserted in the suit and those arising upon the contract are distinct and separate so that the court may, in a proper case, proceed to judgment without joining other parties to the contract, shaping its decree in such manner as to preserve the rights of those not before it." National Licorice Co. v. N. L. R. B., 309 U.S. 350, 363, 60 S.Ct. 569, 577, 84 L.Ed. 799 (1940).

[23] IV. b. *Inequitable conduct.* The next error asserted by Atlas concerns the refusal of the trial court to withhold all relief from Pursche on the ground that he was guilty of inequitable conduct.

The doctrine crystalized in the familiar equitable maxim that "he who comes into equity must come with clean hands" is often invoked by litigants as a defense and sometimes applied by the courts as a bar in actions involving the validity or infringement of patents. Precision Instrument Mfg. Co. v. Automotive Maintenance Machinery Co., 324 U.S. 806, 65 S.Ct. 993, 89 L.Ed. 1381. Seismograph Service Corp. v. Offshore Raydist Inc., 263 F.2d 5 (5th Cir. 1959). But we fail to perceive any basis for its use here. It appears that during a visit to the Atlas factory Pursche observed on one of the two-way plows the then unpatented device referred to earlier in this opinion as the "butterfly type tail wheel." Shortly afterward he filed an application for a patent for the device. This precipitated an interference proceeding in the Patent Office when Chandler also filed an application claiming the same invention. Pursche made no appearance at the hearing and Chandler was ulti-

mately granted the patent although after some delay due to the interference.

These facts fall far short of proving either that Pursche was attempting to pirate another's invention or that he deliberately misrepresented himself to be the inventor to the officials of the Patent Office in order to gain the monopoly, or that he was guilty of any other misconduct in relation to the patent for the "butterfly type tail wheel" or "anything [else] involved in the suit." Keystone Driller Co. v. General Excavator Co., 290 U.S. 240, 245, 54 S.Ct. 146, 148, 78 L.Ed. 293 (1933).

The Pursche-Atlas licensing agreement was in effect at the time; there is nothing to indicate Pursche surreptitiously gained access to the plant or that he believed the invention had been originated by someone other than himself. "On the contrary, Pursche gave testimony which the district court could well have credited to the effect he was in fact the inventor of the tail wheel and had disclosed its salient features to Atlas long before the latter embodied it in a two-way plow."

IV. c. *Rulings on evidence.* Atlas' four final assignments of error relate to the admission and exclusion of evidence.

1. During cross-examination of Atlas' witness Lundie, the court admitted, over Atlas' objection, an exhibit consisting of a written statement by the witness to the effect that (a) he had been an employee of Atlas while the Pursche-Atlas licensing agreement was in force, and (b) on one occasion during that period an officer of Atlas caused him to move a partially completed "two-way" plow embodying one of Chandler's inventions, out of the shop so that Pursche would not see it. Atlas contends that admission of this document was error and that on it rested the sole support for the court's finding in connection with Pursche's claim of unfair competition that Atlas deliberately concealed from him "its development activities" in "two-way" plows.

[24–26] The court should have sustained Atlas' objection. It appears that the exhibit was admitted for the purpose of discrediting the witness for the court, in ruling

on counsel's objection, made the observation that "it is proper cross-examination to show his interest and bias" and also commented that "the latter part [of the statement] is the part which would show his interest and bias." However, the statements were not impeaching; nothing contained in the latter part would even remotely tend to establish any partisanship of the witness in favor of Atlas or prejudice against Pursche or facts from which an improper motive could be inferred.[25] But this admission of the exhibit, although error, does not necessitate a reversal of the judgment. If our interpretation of the court's comments is correct then presumptively the statements appearing in the exhibit were considered solely to lessen the credibility of the witness, not to establish the truth of their subject matter. But even if the admission of the exhibit was general pursuant to its offer by counsel "for the purpose of showing the facts stated in the letter and also for the purpose of showing the intent of the party and his connection with this matter" the conclusion must be the same. There was other competent evidence in the record tending to prove Atlas' misconduct as reflected in the finding. Ordinarily the admission of incompetent evidence over objection will not be grounds for reversal when the case is tried to the court sitting without a jury and there is competent evidence to support the findings since the presumption is that the judge disregarded the incompetent and relied upon the competent evidence. Erceg v. Fairbanks Exploration Co., 95 F.2d 850 (9th Cir. 1938); United States v. National Bank of Commerce, 73 F.2d 721 (9th Cir. 1934).

[27, 28] Atlas next assails the action of the district court with respect to the depositions of Pursche. Atlas had taken Pursche's testimony pursuant to Fed. Rules Civ. Proc., Rule 26, 28 U.S.C.A. in connection with its discovery and at the trial offered the depositions en masse as original evidence. But the court refused their admission. It does not appear that the depositions were irregularly taken or

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[25] The exhibit could not have been used as a prior inconsistent statement to impeach the witness, for his direct examination had not extended to the matter referred to in the exhibit.

that the court rejected them because they were lengthy and no doubt contained much that was repetitious, extraneous or otherwise inadmissible. Rather, it appears the court was of the opinion that since Pursche was present Atlas was required to call him as a witness and could not use his deposition to prove any fact or facts therein stated. This conclusion is manifest for in ruling, the court flatly said: "You are not entitled to have the depositions introduced if the witness is here except for impeaching purposes."[26] This was error. The use of depositions is regulated by Rule 26 (b); subsection one permits "any party" to use a deposition to impeach the deponent as a witness, while subsection three permits "any party" to use the deposition of any person as primary proof of the facts stated there provided the deponent is first shown to be unavailable as a witness; but subsection two permits "an adverse party" to use the deposition of "a party * * * for any purpose" and imposes no preliminary conditions to this use of the testimony. This is but a tacit way of saying that the deposition can be used as original evidence regardless of the presence or absence of the deponent. Pfotzer v. Aqua Systems, Inc., 162 F.2d 779 (2d Cir. 1947); Merchants Motor Freight, Inc. v. Downing, 227 F.2d 247 (8th Cir. 1955); 4 Moore Fed.Prac. p. 1190.

[29] We do not mean to sanction the practice of indiscriminately offering an entire deposition or encourage any attempt to thus impose upon the court. In Merchants Motor Freight v. Downing, supra, the court stated the deposition

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[26] The rationale of the district court also appears in the record:

"I do not think it is proper to use the depositions when the witnesses are before the court because you are introducing a piece of paper, and part of the function of the trial judge is to weigh the evidence and you cannot weigh it when it is on a piece of paper. You can weigh it when it comes live from the mouths of witnesses."

This statement reflects the historic legal view expressed in statutes such as Revised Statute § 865 (2nd ed. 1878), 28 U.S.C.A. § 641 (1934), that "on the trial itself the adducing of facts by viva voce testimony of witnesses * * * whose demeanor and manner are subject to the observation of the judge or jury * * * is superior to the use of written statements of the same witness." The New Federal Deposition & Discovery Procedure, 38 Col. L. Rev. 1436 at 1443 (1938).

of a party might be admitted "subject to the court's right to exclude such parts thereof as might be unnecessarily repetitious in relation to the witness' testimony on the stand." No doubt that procedure has merit but we believe as a general rule the better practice is for the court in the first instance to require counsel to specify the particular portions that are deemed relevant and to limit the offer accordingly. Cf. United States v. United Shoe Machinery Corp., 93 F.Supp. 190 (D.C.D.Mass.1950).

But the record does not demonstrate that the error was prejudicial. On three occasions Atlas examined Pursche as an adverse party pursuant to Rule 43(b); the examination covered many matters involved in the action and was not limited by the court; the last of Pursche's appearances followed Atlas' unsuccessful attempt to introduce his depositions. Atlas then interrogated Pursche, covering various matters appearing in the deposition and his testimony concerning them, and at no time did Atlas offer to prove that Pursche's testimony at the trial fell short of any appearing in the depositions. 28 U.S.C.A. § 2111; McKee v. Jamestown Baking Co., 198 F.2d 551 (3 Cir. 1952); Watts v. Holland, 153 F.2d 337 (9th Cir. 1946); Davis v. R. K. O. Radio Pictures, 191 F.2d 901 (8th Cir. 1951).

[30] Atlas' next point concerns the refusal of the district court to admit into evidence certain motion pictures covering a long interval during one of the two field demonstrations at which the court observed in operation several of the Atlas and Pursche plows. There was no error in this ruling. Both parties adduced testimony in considerable detail describing both the construction and the mode of operation of their plows and in addition some 46 still pictures taken at the demonstration were admitted in evidence. The proposed exhibit was cumulative of the evidence and in its rejecting the court acted without its discretion.

[31] Atlas' final point that a telegram admitted by the district court over objection that its contents were hearsay is well taken. However, the error is harmless and does not necessitate a reversal of this judgment.

The exhibit was relevant to the issue of the validity of Pursche's patents and was offered as part of Pursche's

proof that his inventions met with a ready market. The telegram purported to show that the royalty accruing to Pursche from International Harvester Co. during a part of the period that International made use of Pursche's patents under a licensing agreement was "about eleven thousand nine hundred forty-two dollars."

But even without this exhibit there was uncontradicted evidence that Pursche received royalties of nearly $25,000 from International and in excess of $75,000 from Atlas, as well as other evidence tending to prove that Pursche's inventions met with a considerable commercial success.

[32, 33] IV. d. *Costs.* The only point remaining is one urged by Pursche on his cross appeal and relates to the provision in the judgment that "[e]ach party shall pay its own costs." Atlas was the prevailing party and the judgment was predominantly in his favor; but these facts did not compel an award to him of costs. The district court held claim 1 of the 090 patent was invalid and that the Atlas B-2, B-3 and B-4 plows did not infringe any of Pursche's patents. The matter of costs is primarily the concern of the district court and under the circumstances of the instant case we cannot say that the denial of costs to Pursche constitutes an abuse of discretion. General Motors Corp. v. Leer Auto Supply, 60 F.2d 902 (2d Cir. 1932); Emerson v. National Cylinder Gas Co., 251 F.2d 152 (1st Cir. 1958); Refrigeration Engineering Inc. v. York Corp., 168 F.2d 896 (9th Cir. 1948), cert. den. 335 U.S. 859, 69 S.Ct. 133, 93 L.Ed. 406; Brunswick-Balke-Collender Co. v. American Bowling & Billiard Corp., 150 F.2d 69 (2d Cir. 1945).

In sum we agree with the judgment of the court below to the extent it adjudicates:

(a) that claims 6, 7, 8, 9, 11, 12, 13, 15, 16, 20, 21, 22, 23, 24 and 27 of the 090 patent are valid.

(b) that claim 1 of the 090 patent is invalid;

(c) that the Atlas B-5 plow infringes claims 12 and 27 of the 090 patent;

(d) that the Atlas B-1 plow infringes all the claims of the 090 patent enumerated above in section (a);

(e) that the "new style" Atlas plow does not infringe any of the claims of the Pursche patents;

(f) that Atlas was guilty of unfair competition;

(g) that an injunction issue restraining further infringement by Atlas;

(h) that each party shall bear his own costs.

However, we disagree with that judgment so far as it holds valid and infringed claims 2 to 5, 10, 14, 17, 18, 19, 25 and 26 of the 090 patent and the 786 and 284 patents; we hold each of these claims of the 090 patent and the 786 and 284 patents are invalid.

The judgment of the district court will be modified accordingly and as thus modified is affirmed.

Neither party is allowed the costs of the appeal.

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Opinion of the United States District Court for the Southern District of California, Central Division

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Thursday, June 5, 1958—2:00 p.m.

OPINION OF THE COURT

The Court: This method of deciding patent cases may not be the most satisfactory in the world to counsel, certainly you do not have the benefit of a long detailed analysis of everything, but I know about as much of this case as I will ever know even though you may have briefed it and I might have studied it later. And the advantage of making a decision from the bench is that at least you know what the decision of the Court is without waiting too long for it.

The first thing that must be decided in connection with the plaintiff's patents here is their validity, and the first thing in that connection is whether or not there was anticipation in the prior art.

Taking each one of the plaintiff's patents, I do not think there was *any anticipation* in any of the prior art which has been shown to this Court. Certainly in the prior art patents, and in the prior art, outside of the patents, all of the elements which were put together by the farmer, Mr. Pursche, to make a successful plow, that is, a useful rollover plow—and in my judgment a new one—were known. But he put them together in a combination which was, in my judgment, new and useful.

In this connection I have in mind the statement of [2715] this circuit in the Leishman case which was cited this morning, in 191 F. (2d), that the Court takes into consideration four things.

The first is the length of time that the art went through needing the invention and the length of time it went without it. Certainly the length of time that a rollover plow, a successful rollover plow which was operable and which could be easily operated and which would not only plow

shallow and merely scrape the surface of the ground, such as a cultivator or a harrow, but would actually turn the soil, was needed and it has been needed in the art for a long time.

A second element is the number of those who sought to meet the need and the period over which their efforts were spread. The prior art patents here showed that people attempted in the American scene (and disregarding the foreign patents), that people were attempting to meet this need as long ago as 1871. Certainly not the Capon nor the Unterilp patents, which are crude, and, in my judgment, neither of them would work—I think the Unterilp patent if it were built and put in the ground would break to pieces; I do not think it would hold together at all—so it could not have been a new and useful thing, and it did not anticipate the combination that is here.

I merely cite those to show how long other people had been at it. [2716].

The third element is how many others came upon the same idea and about the same time. Well, people were getting close to the idea when they got the Lindeman plow and when they got some of the Ferguson plows. But neither the Lindeman plow nor the Ferguson plow, in my judgment, anticipated the plow which Mr. Pursche invented here.

The fourth element, and described as the most important of all, is the extent to which it superseded what had gone before. I think the evidence is pretty plain, in this case that the basic and general methods which were devolved by Mr. Pursche here, whether they are infringed or not is another question, but the basic and general method has certainly superseded the prior art in plows. [2717]

So the Court must conclude that insofar as all five of the patents in suit—one, the '851, was stipulated out of the suit, am I correct?

Mr. Whann: That's right.

Mr. Lyon: That's right.

The Court: As to the five patents that remain in the suit, I do not think they are void for anticipation of the prior art.

Insofar as double patenting is concerned, I think the rule is correct that the double patent rule stems from the effort of the law to prevent an extension of the monopoly of the patent. Therefore, it would not apply to '089, '090, and '091.

I have again examined the claims in both '786 and in '284. In my judgment, while they are similar, I do not think they are sufficiently similar in either '786 or '284 as to amount to a double patent.

'786 and '284 are plows that are used differently. They do not have all of the elements of the claims that are in either of the three prior patents. All three of the prior patents were plows which required wheels on a frame separate and apart from the wheels of the tractor, and while in '786 and '284 many of the elements which are in the previous Porsche patents are present, I do not think, and I have read each claim, I do not think that I can read any one of the [2718] claims wherein it can be said that they have all of the elements so as to amount to a double patent.

The matter of the invalidity because of the failure of description of the patent has given me some considerable concern, especially in connection with '090. I have again read all the claims there. I think the claim 1 of that patent is the only one that would be void because of the inaccuracy of description.

Insofar as infringement is concerned, I am satisfied that the claims in '089, 12, 13, 14, 15, and 16, and all of the claims in '090 except claim 1, and the claims in '091 are infringed by the defendant's B-1 plow.

I am satisfied that the claims as to the defendant's B-5 plow, not claim 1, but the other claims asserted, 3, 10, 12, 18, 25, 26, and 27 in '090, 1, 2, 3, 4, 5, 6, 8, 9, 12, 13, 14, and 15 in '786, and claims 3, 8, 10, and 15 in '284 are infringed by the defendant's B-5 tractor-mounted plow.

As to the defendant's B-3, B-4, B-6, and B-7, I think the defendants there took some of the things that the plaintiff had, but I think it is a different combination and I do not believe taken as a whole that it infringes the claims of the plaintiff's patent. When I say it is a different combination, it is a different combination in that it works differently,

particularly with the two wheels riding on the unplowed ground, and particularly with the eccentric mounting of [2719] the plows, so it is the holding of the Court that B-3, -4, -6, and -7 do not infringe the plaintiff's patents.

We come now to the question of unfair competition. One difficulty with that cause of action in this case is that Chandler is not before the Court. I think that if Chandler were present before the Court, I would be bound to almost give the judgment as prayed for by the plaintiff. [2720]

But Chandler is not present before the Court, and the only parties who are here and who had their rights litigated, have been Pursche and Atlas, and therefore any relief which this Court has the power to grant must be applied only as between those two parties.

The evidence shows clearly, in my judgment, that Chandler was an employee of Atlas, that he devised these means as the employee and the agent of Atlas, as demonstrated not only by the term of his employment, by the fact that he actually drew, for instance, the rough designs which were introduced in evidence of the turnover mechanism and various other drawings, but as demonstrated by the fact that Atlas at all times paid all expenses, lawyers' fees, patent application costs, everything else insofar as Chandler was concerned. Even so I cannot give any relief against Chandler.

So the question arises as to what relief can this Court give under this state of facts as against Atlas. In my judgment, the rollover mechanism which was used in the big type plow and in each of the Atlas plows, that is, the actuating rollover mechanism, whatever you want to call it, is the equivalent and a mere substitute for Pursche's.

Entirely aside from that, under the contract between Pursche and Atlas, Pursche is entitled to whatever benefits Atlas has out of the patent on the two tail wheels by Chandler and out of the patent that Chandler has and which is [2721] covered by a contract which is in evidence, Exhibits 43 and 44, concerning the actuating mechanism.

Moreover, in the plows which I have held are a new combination and which do not infringe Pursche's plow, Pursche is entitled to relief against Atlas from using that

actuating mechanism in connection with those plows, because whatever Atlas got under that contract concerning that actuating mechanism, Pursche got. So if Atlas has a right to use it on the B-3, B-4, B-6 and B-7 plows, then that right is Pursche's right and Pursche is entitled to an injunction, in my judgment, enjoining Atlas from using that actuating mechanism without his consent or in using the butterfly tail wheel or the other tail wheel, each of which, in my judgment, in addition to being covered by the contract is covered by Pursche's tail wheel and his combination, and enjoining them from using it without his consent.

I think that I have covered all of the issues which are necessary to a decision of the case. Does any occur to counsel?

Mr. Whann: I have just one question, your Honor, and that is in connection with the chain type tail wheel. Does your Honor have in mind that the evidence showed that that was not designed or did not come into being until after the termination of the contract?

The Court: Yes, I have that in mind. But, as I [2722] have pointed out a moment ago, there were two things which, in my judgment, justified the conclusion which I have made, and whatever Atlas has in connection with that Pursche has, that is, that not only Chandler was an employee and admittedly conceived some of these things before, but after he ceased to be an employee he actually was an agent of Atlas because they have continued to pay the attorney fees and all of the costs and everything relating to the patent. And there was no evidence of any contract as to the basis upon which that was done until the evidence concerning this contract, which did not come into being until the first of November, 1957, long after all of the money had been advanced and all of the work had been done.

* * * * * * *

[Endorsed]: Filed March 20, 1959.

Findings of Fact, Conclusions of Law, and Judgment

In the United States District Court for the Southern District of California, Central Division

Civil Action No. 16,005—PH

Harry A. Pursche, an Individual, *Plaintiff*

vs.

Atlas Scraper and Engineering Co., a Corporation, *Defendant.*

Civil Action No. 20,408—PH

Atlas Scraper and Engineering Co., a Corporation, *Plaintiff*

vs.

Harry A. Pursche, an Individual, *Defendant.*

Findings of Fact, Conclusions of Law, and Judgment

Findings of Fact

1

The party Harry A. Pursche is a citizen and inhabitant of the State of California and resides in the City of Gardena, County of Los Angeles, State of California.

2

The party Atlas Scraper and Engineering Co. is a California corporation having a regular and established place of business in Bell, in the County of Los Angeles and State of California.

3

The Court has jurisdiction of this cause under Title 28, United States Code, Section 1338.

4

On January 13, 1953, United States Letters Patent Nos. 2,625,089; 2,625,090 and 2,625,091 were issued to the party Harry A. Pursche; and on April 7, 1953, United States Letters Patent No. 2,633,786 were issued to the party Harry A. Pursche; and on Novmeber 17, 1953, United States Letters Patent No. 2,659,284 were issued to the party Harry A. Pursche; and at all times since the date of issue of each of said Letters Patent, the party Harry A. Pursche has been and still is the owner of said Letters Patent.

5

The party Harry A. Pursche is a farmer and for many years, prior to 1947, farmed substantial acreages near Gardena and North Long Beach, California, raising irrigated truck garden crops on a large scale basis. Such crops require that the land be maintained substantially flat for proper irrigation. A two-way plow was necessary to maintain the necessary flatness for irrigation. The advantage of a two-way plow having right-hand and left-hand plowshares is that the right-hand plowshares can be used for one trip across the field and the left-hand plowshares used for the return trip across the field so that all the furrows are thrown in the same direction, eliminating dead furrows and gullies. Two-way plows commercially available in 1947, and prior thereto, could not successfully plow to meet the conditions necessary to the successful growing of the crops desired to be produced by the party Harry A. Pursche.

6

In the latter part of 1946, and in the early part of 1947, the party Harry A. Pursche personally constructed a large two-way plow having four right-hand plowshares and four left-hand plowshares. The work was done in a small shop on one of his ranches and he performed the welding operations himself. The plow was completed in April, 1947, and was highly successful. With some minor variations, the plow is shown in the drawings of Patent No. 2,625,090. It

was demonstrated to the Court in a field test near North Long Beach, California, on March 12, 1958, Exhibits 25A to 25I.

7

Later the same year, 1947, the party Harry A. Pursche constructed another two-way plow. This one was for deep tillage and employed a single right-hand plowshare and a single left-hand plowshare. The plow is shown in the drawings of Patent No. 2,625,091. That plow was highly successful. It was demonstrated to the Court in a field test near North Long Beach, California, on March 12, 1958, Exhibits 25A to 25G, inclusive.

8

The party Harry A. Pursche exhibited the two-way plows substantially as shown in the drawings of Patent Nos. 2,659,090 and 2,659,091 at the County Fair at Hemet, California, in the Fall of 1947. Exhibits 24A and 24B.

9

The next year, 1948, the party Pursche constructed a two-way plow having two right-hand plowshares and two left-hand plowshares as shown in the drawings of Patent No. 2,625,089. That plow was highly successful. It was demonstrated to the Court in a field test near North Long Beach, California, on March 12, 1958. Exhibits 27A to 27E, inclusive.

10

A second plow constructed by the party Harry A. Pursche, in 1948, was a tractor mounted two-way plow for a "Farm-All" tractor as shown in the drawings of Patent No. 2,659,284. This tractor mounted two-way plow was highly successful. It was demonstrated to the Court in a field test near North Long Beach, on March 12, 1958. Exhibits 28A, 28B.

11

The third plow constructed by the party Harry A. Pursche, in 1948, was a tractor mounted two-way plow for

a "Ford" tractor as shown in the drawings of Patent No. 2,633,786. This tractor mounted two-way plow was highly successful. It was demonstrated to the Court in a field test near North Long Beach, on March 12, 1958. Exhibits 29A, 29B.

12

Each of the two-way plows constructed by the party Harry A. Pursche and as shown in the drawings of Patent Nos. 2,625,089; 2,625,090; 2,625,091; 2,633,786; and 2,659,284 included a frame having a longitudinal beam, a carrier mounted to turn on the beam, right and left-hand plows mounted 180° apart on the carrier, and hydraulic power beams, mounted transversely on the frame adjacent the forward end of the carrier for turning the carrier on the longitudinal beam to bring either of the plows into operative position. Each plow device also included a thrust collar mounted at the rear end of the longitudinal beam for applying draft force to the carrier. Each two-way plow, with the exception of the two-bottom plow as shown in the drawings of Patent No. 2,625,089, employed a tail wheel movably mounted on the carrier and adapted to roll on unplowed ground in either position of the carrier to assist in controlling the depth of cut of the plows.

13

In October of 1950, the party Pursche sold the four bottom plow of the type shown in the drawings of Patent No. 2,625,090 to Willis L. Miller, now residing in Garden Grove in the County of Orange, State of California, and the plow has been extensively used by him since that date and is still in his possession.

14

The single-bottom deep tillage plow shown in the drawings of Patent No. 2,625,091 was sold by the party Harry A. Pursche to Edgar E. Cox of Santa Ana, California, during the year 1953, and is still in his possession and has been used extensively by him and by his lessees.

15

The two-bottom plow as shown in the drawings of Patent No. 2,625,089 was sold by the party Harry A. Pursche to his nephew Roy C. Pursche of Gardena, California, in the Fall of 1948, and the plow is still in his possession and has been used extensively by him in contract plowing operations.

16

The tractor mounted plow shown in the drawings of Patent No. 2,659,284 was sold by the party Harry A. Pursche to George Ogata of Beuna Park, California, during the year 1952. The plow is still in the possession of George Ogata and has been used extensively by him since the date of purchase.

17

The tractor mounted plow as shown in the drawings of Patent No. 2,633,786 is still in the possession of the party Harry A. Pursche and has been used extensively by him until the present time.

18

The parties Harry A. Pursche and Atlas Scraper and Engineering Co. entered into a royalty license agreement dated April 3, 1948, Exhibit 7 (Item B-19). Prior to that time, the party Atlas Scraper and Engineering Co. had never built a two-way plow, nor any kind of plow.

19

The two-way plows constructed by the party Harry A. Pursche and as shown substantially in the drawings of Patents Nos. 2,625,089 2,625,090; 2,625,091; 2,659,284, and 2,633,786, were made available to the party Atlas Scraper and Engineering Co. for measurement and study of its management and its engineers.

20

The party Atlas Scraper and Engineering Co. manufactured and sold wheel-carriage two-way plows as shown in Exhibits 18 and 19, and tractor mounted two-way plows similar to those shown in Exhibit 22, between April 3, 1948, and July 13, 1952, under the royalty license agreement, Exhibit 7, (Item B-19), and paid royalties to Harry A. Pursche as required by said agreement.

21

For many years prior to the invention by the party Harry A. Pursche of the two-way plow disclosed in patents in suit, there existed a need in the plowing art of a practical and successful roll-over plow which could be easily controlled by the operator and which would plow deep enough actually to turn the soil, and not merely scrape the surface of the ground, as is the case with a cultivator or harrow.

22

The wheel carriage two-way plows manufactured and sold by the party Atlas Scraper and Engineering Co. and as shown in Exhibit 18, operated with the two carriage wheels alternately rolling in the furrow and this feature prevented lateral shifting of the plows in operation and hence avoided leaving undesirable unplowed strips in the land.

23

Effective July 13, 1952, the party Atlas Scraper and Engineering Co. cancelled the royalty license agreement Exhibit 7, (Item B-19), in accordance with Paragraph XIII of the agreement, but continued to manufacture and sell devices of the type shown in Exhibits 18, 19 and 22, without further payment of royalties.

24

Subsequent to January 3, 1953, the party Atlas Scraper and Engineering Co. manufactured and sold two-way plows in accordance with Exhibit 18.

25

The two-way plows of Exhibit 18 infringe Claims 12, 13, 14, 15 and 17 of Patent No. 2,625,089.

26

The two-way plows of Exhibit 18 infringe all claims of Patent No. 2,625,090.

27

The two-way plows of Exhibit 18 infringe Claims 6, 7, 8, 9, 14, 15 and 22 of Patent No. 2,625,091.

28

The two-way plows of Exhibit 18 were not identical to the disclosure of any one of the Patents Nos. 2,625,089; 2,625,090; 2,625,091, but incorporated features of invention from each.

29

Subsequent to January 3, 1953, the party Atlas Scraper and Engineering Co. manufactured and sold two-way plows of the type shown in Exhibit 20 (Items B-3 and B-7), Exhibit 21 (Item B-4), Exhibit 23 (Item B-6), but these plows did not infringe any of the claims of the patents in suit because the plows use a different combination from that claimed in said patents and taken as a whole, they do not infringe the claims of said patents. The combination is different in that it works differently, particularly with the two wheels riding on the unplowed ground and particularly with the eccentric mounting of the plows.

30

Subsequent to January 3, 1953, the party Atlas Scraper and Engineering Co. manufactured and sold tractor-mounted two-way plows shown in Exhibit 22.

31

The two-way plows of Exhibit 22 infringed Claims 3, 10, 12, 18, 25, 26 and 27 of Patent No. 2,625,090.

32

The two-way plows of Exhibit 22 infringed Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14 and 15 of Patent No. 2,633,786.

33

The two-way plows of Exhibit 22 infringed Claims 3, 8, 10 and 15 of Patent No. 2,659,284.

34

The ninety-odd prior patents and prior publications set up by the party Atlas Scraper and Engineering Co., none of which anticipate any of the claims of the patents in suit, show clearly that many persons had attempted to solve the problem but that all had failed to do so, and this large number of patents and publications serves only to emphasize the importance of the inventions made by the party Harry A. Pursche and covered by the patents in suit.

35

The disclosure of the Capon patent No. 2,426,548, Exhibit A-45, does not anticipate any of the claims of the patents in suit.

36

The disclosure of the German patent to Unterilp No. 49,222, Exhibit A-79, does not anticipate any of the claims of the patents in suit.

37

A full size model of the plow disclosed in the German patent to Unterilp No. 49,222, Exhibit A-79, was exhibited to the Court and showed that the device was crude and would not work; if it were built and put in the ground it would break to pieces and would not hold together.

38

A two-way plow alleged by the party Atlas Scraper and Engineering Co. to be constructed in accordance with the disclosure of the Lindemann Patent No. 2,543,786, Exhibit

A-55, was demonstrated to the Court in a plowing operation under direction of an expert of the party Atlas Scraper and Engineering Co., and did not anticipate any of the claims of the patents in suit.

39

Each of the claims in suit of Patent No. 2,633,786 distinguishes clearly and inventively over the claimed subject matter of the claims in suit of the prior Patent Nos. 2,625,089, 2,625,090 and 2,625,091.

40

Each of the claims in suit of Patent No. 2,659,284 distinguishes clearly and inventively over the claimed subject matter in each of the claims in suit of Patent Nos. 2,625,089, 2,625,090, 2,625,091 and 2,633,786.

41

The elements of the combinations defined in the claims of the patents in suit are each individually old in the prior art.

42

The elements of the combinations of Claims 12, 13, 14, 15 and 16 of Patent No. 2,629,089 perform additional and different functions in combination than they perform out of the combination, to wit: they provide a direct acting hydraulic power connection between the frame and the wheel arms to form a compact unit eliminating intermediate parts between the hydraulic cylinder assemblies and their respective wheel arms.

43

The Pursche Patent No. 2,625,090 in suit overcame the problem in the two-way roll-over plow art in providing a new combination of a frame, a longitudinal beam fixed on the frame and extended rearwardly, a plow carrier mounted to turn on the longitudinal beam and provided with right and left-hand plows, and a power developing

hydraulic cylinder assembly on the frame acting through a power transmitting connection to revolve the plow carrier in either direction, thereby establishing a close coupled assembly in which the functions accomplished are more than the sum of the functions of the separate elements.

44

The elements of the combinations of all claims of Patent No. 2,629,090, with the exception of Claim 1, perform an additional and different function in combination than they perform out of combination, to wit: they provide a close coupling relationship between the frame, plow carrier and hydraulic cylinder assembly, which enables the operator to turn the carrier independently of forward motion and independently of the raising and lowering action, and provides quick entry and exit of plows with relation to the land, with the result that the space required at the headlands for turn-around is substantially decreased with relation to prior art devices.

45

The elements of the combinations of Claims 6, 7, 8, 9, 14, 15 and 22 of Patent No. 2,625,091 perform additional and different functions in combination than they perform out of combination, to wit: they provide direct application of draft force directly to the longitudinal beam which supports the plow carrier thereby reducing draft force stresses in the remainder of the frame, and they provide for mounting scraper blades on the plow carrier in advance of the plows so that trash may be cut by the scraper blades and buried by the plows in a single plowing operation and with either right-hand or left-hand plows in operative position.

46

The elements of the combinations of Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14 and 15 of Patent No. 2,633,786 perform additional and different functions in combination than they perform out of the combination, to wit: they provide

a hitch mounting for a "Ford-Ferguson" type tractor with power lift draft links, and provide a construction wherein the weight of the two-way plow assembly is effective to assist in turning the plow carrier on the longitudinal beam of the frame.

47

The elements of the combinations of Claims 3, 8, 10 and 15 of Patent No. 2,659,284 perform additional and different functions in combination than they perform out of combination, to wit: they provide a direct mounting connection for a two-way plow for support on the rear of a tractor, the support means on the plow being mounted at opposed ends of a cross member of the frame, thereby producing a close coupling connection to minimize rearward extension of the parts of the plow and thereby minimize "bucking" or undesirable lifting of the front end of the tractor.

48

During the trial United States Letters Patent No. 2,655,851 granted to the party Harry A. Pursche on October 20, 1953, was withdrawn from both suits, Civil Action Nos. 16,005-PH and 20,408-PH without prejudice to either party.

49

Claim 1 of Patent No. 2,625,090 is invalid as failing to define the invention of the party Harry A. Pursche, in that it does not include in the combination set forth the longitudinal beam upon which the plow carrier is mounted to turn.

50

Two-way plows having the features claimed in the patents in suit have met with immediate acceptance by the trade and have superseded other types of two-way plows.

51

Two-way plows embodying the inventions of the patents in suit including the plows built by the party Atlas Scraper and Engineering Co. and by the present non-exclusive licensee, International Harvester Company, have met with outstanding commercial success.

52

The total amount of such royalties paid to the party Harry A. Pursche by the party Atlas Scraper and Engineering Co. under the license agreement, Exhibit 7, (Item B-19), was in excess of $75,000.00.

53

On or about March 31, 1953, the party Harry A. Pursche executed a non-exclusive royalty license contract with International Harvester Company of Chicago, Illinois, Exhibit 7, (Item B-20).

54

The non-exclusive license contract, Exhibit 7, (Item B-20), between the party Harry A. Pursche and International Harvester Company includes each of the patents here in suit.

55

The non-exclusive license contract between the party Harry A. Pursche and International Harvester Company Exhibit 7, (Item B-20), is still in force and International Harvester Company has paid to the party Harry A. Pursche royalties in excess of $35,000.00 to date.

56

In the development of the two-way plows of the patents in suit, the party Harry A. Pursche overcame the problems which existed in the production of a two-way roll-over plow, and International Harvester Company has abandoned its own attempted solution of the problems existing in the production of such a plow and has recognized and adopted

the solution of these problems by the party Harry A. Pursche and as claimed in the patents in suit.

57

Paragraph IX of the license agreement, Exhibit 7, (Item B-19), contains the following provisions:

"Atlas agrees, for itself and for its sub-licensees, to promptly and fully disclose to Pursche any and all inventions, improvements, modifications and betterments made, discovered or acquired by Atlas and/or its sub-licensees relating to the plow construction forming the subject matter of this agreement; and any and all such inventions, improvements, modifications and betterments upon the aforesaid plow construction made during the life of this agreement by or through the efforts of Atlas and/or its sub-licensees, or coming under the control of Atlas or its sub-licensees, shall belong to Pursche whether patentable or not and shall be properly assigned to Pursche by Atlas, free from any payment or compensation therefore, to full extent of the interest of Atlas or its sublicensees, therein, * * *."

58

On or about November, 1950, Roy L. Chandler entered the employ of the party Atlas Scraper and Engineering Co. as an engineer and designer, and left such employment on or about September, 1956.

59

While said Roy L. Chandler was in the employ of the party Atlas Scraper and Engineering Co. and during the term of the license agreement, Exhibit 7 (Item B-19), he made certain inventions, improvements, modifications, or betterments for two-way plows of the type covered by the said license agreement.

60

Said inventions, improvements, modifications, and betterments of Roy L. Chandler were made in the course of his employment as an engineer and designer while working on

projects assigned to him by management of the party Atlas Scraper and Engineering Co.

61

One of the inventions, improvements, modifications, or betterments so developed by said Roy L. Chandler was a gear type rollover mechanism for turning the plow carrier on the longitudinal beam. One form of the devise is shown in Chandler Patent No. 2,817,241, Exhibit No. 44.

62

Another form of the gear type rollover mechanism developed in part by Roy L. Chandler is shown in the Chandler and Ogle Patent No. 2,830,519, Exhibit AR.

63

Another invention, improvement, modification, or betterment developed by said Roy L. Chandler during the term of the license agreement, Exhibit 7 (Item B-19), was a butterfly tail wheel device shown in Exhibits 33 and 51.

64

Said butterfly tail wheel device was reduced to practice by the party Atlas Scraper and Engineering Co. by the building and testing of a full-scale device in the spring of 1952, and prior to the termination of the license agreement, Exhibit 7 (Item B-19).

65

An interference proceeding No. 88135 in the United States Patent Office was declared between patent application Serial No. 334,578 filed February 2, 1953, in the name of Roy L. Chandler and a patent application Serial No. 323,200 filed November 29, 1952, by the party Harry A. Pursche, and was prosecuted by the party Atlas Scraper and Engineering Co. against the party Harry A. Pursche, which interference proceeding was denied in favor of Chandler and that decision has become final.

66

Another invention, improvement, modification, or betterment developed by said Roy L. Chandler while in the employ of the party Atlas Scraper and Engineering Co., as an engineer and designer, is the chain type wheel device shown in the Chandler Patent No. 2,773,439, Exhibit 42.

67

The party Atlas Scraper and Engineernig Co caused United States patent applications to be filed in the name of its employee, Roy L. Chandler, relating to the butterfly tail wheel device, the gear type rollover mechanism and the chain type tail wheel device in an attempt to circumvent the requirement of the license agreement, Exhibit 7 (Item B-19), and to evade the obligation of assignment of title to the party Harry A. Pursche.

68

All patent applications filed in the name of Roy L. Chandler or Roy L. Chandler and another were prepared and filed by attorneys for the party Atlas Scraper and Engineering Co.

69

The party Atlas Scraper and Engineering Co. paid all fees and expenses in connection with the filing and prosecution of each of the applications filed in the name of said Roy L. Chandler or in the name of Roy L. Chandler and another.

70

No invoices for fees or expenses in connection with filing or prosecuting patent applications in the name of Roy L. Chandler or Roy L. Chandler and another were sent to Roy L. Chandler, but on the contrary, all were sent to the party Atlas Scraper and Engineering Co.

71

The character of the engineering work performed by Roy L. Chandler while in the employment of the party Atlas Scraper and Engineering Co. was that of engineering, layout, and design and not merely that of a draftsman.

72

On or about November 1, 1957, the party Atlas Scraper and Engineering Co. entered into a written license agreement with said Roy L. Chandler, Exhibit 43A.

73

Roy L. Chandler was not represented by counsel, other than counsel for the party Atlas Scraper and Engineering Co., in negotiating the license agreement, Exhibit 43A.

74

Foreign patent applications were filed by the party Atlas Scraper and Engineering Co. in Great Britain, Canada, and Mexico, corresponding to the United States patent application in the name of Roy L. Chandler, Serial No. 334,578, Exhibit 51.

75

The British patent application issued as British Patent No. 752,103, Exhibit AY.

76

The Mexican patent application issued as Mexican Patent No. 56,332, Exhibit AZ.

77

The Canadian patent application has not yet issued, and is still pending, Serial No. 659,239, filed June 4, 1954, Exhibit BA.

78

The party Harry A. Pursche contributed suggestions to management and engineering personnel of the party Atlas Scraper and Engineering Co. during the term of the license agreement, Exhibit 7 (Item B-19), concerning design and construction of two-way plows, but the final decisions on design and construction were made by management of the party Atlas Scraper and Engineering Co.

79

The party Harry A. Pursche made numerous field trips with Mr. Claude B. Ogle, Sr., president of the party Atlas Scraper and Engineering Co. during the term of the license agreement, Exhibit 7 (Item B-19), for the purpose of promoting sales and establishing goodwill for Atlas two-way plows.

80

During the term of the license agreement, Exhibit 7 (Item B-19), the party Atlas Scraper and Engineering Co. concealed from the party Harry A. Pursche development activities of its employee, Roy L. Chandler, in two-way plows.

81

That the development made and disclosed in the Chandler application Serial No. 334,578, Exhibit 51; in the Chandler Patent No. 2,773,439, Exhibit 42; in the Chandler Patent No. 2,817,241, and the rollover mechanism as shown in Figure 6 of the Chandler and Ogle Patent No. 2,830,519, Exhibit AR, and the tail wheel shown and described in said patent, were improvements, modifications, and betterments upon the Pursche plows and were made or conceived within the term of the license agreement, Exhibit 7 (Item B-19), and were made within the provisions of said agreement and through the efforts and under the control of the party Atlas Scraper and Engineering Co. and its employee, Roy L. Chandler.

82

The said improvements, modifications, and betterments of the preceding Finding were made at the cost and expense of the party Atlas Scraper and Engineering Co. by its employees who acted under its direction, and all costs and expenses thereof, including the material which was used in their development, the time which was consumed in their development and all costs in connection with the reduction to practice of the devices embodying the developments were borne by the party Atlas Scraper and Engineering Co.

83

The party Atlas Scraper and Engineering Co., in failing and refusing to carry out its obligations under the provisions of Paragraph IX, Exhibit 7 (B-19), with respect to the said improvements, modifications, and betterments as defined in the two preceding Findings of Fact, and in continuing to use and utilize said improvements, modifications, and betterments without compensation to, or without the authority and consent of the party Harry A. Pursche, has competed unfairly with Harry A. Pursche.

84

The party Atlas Scraper and Engineering Co., prior to the termination date of the license agreement, Exhibit 7 (B-19), held out to the trade and to the purchasing public that the rollover plows which were offered for sale under the agreement, Exhibit 7 (B-19), were the development and invention of Harry A. Pursche.

Conclusions of Law

I

United States Letters Patent No. 2,625,089 were duly and legally issued to the party Harry A. Pursche on January 3, 1953.

II

United States Letters Patent No. 2,625,090 were duly and legally issued to the party Harry A. Pursche on January 3, 1953.

III

United States Letters Patent No. 2,625,091 were duly and legally issued to the party Harry A. Pursche on January 3, 1953.

IV

United States Letters Patent No. 2,633,786 were duly and legally issued to the party Harry A. Pursche on April 7, 1953.

V

United States Letters Patent No. 2,659,284 were duly and legally issued to the party Harry A. Pursche on November 17, 1953.

VI

The party Harry A. Pursche is the owner of said Letters Patent Nos. 2,625,089; 2,625,090; 2,625,091; 2,633,786; and 2,659,284.

VII

Claims 12, 13, 14, 15, and 16 of Patent No. 2,625,089 define a new and meritorious invention and are good and valid in law.

VIII

Claims 2 to 27, inclusive, of Patent No. 2,625,090 define a new and meritorious invention and are good and valid in law.

IX

Claim 1 of Patent No. 2,625,090 is invalid as failing to define the invention made by the party Harry A. Pursche.

X

Claims 6, 7, 8, 9, 14, 15, and 22 of Patent No. 2,625,091 define a new and meritorious invention and are good and valid in law.

XI

Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14, and 15 of Patent No. 2,633,786 define a new and meritorious invention and are good and valid in law.

XII

Claims 3, 8, 10, and 15 of Patent No. 2,659,284 define a new and meritorious invention and are good and valid in law.

XIII

United States Letters Patent Nos. 2,625,089; 2,625,090; 2,625,091 were all granted on January 3, 1953, and within the provisions of 35 U.S.C., Sec. 120.

XIV

United States Letters Patent Nos. 2,625,089; 2,625,090; and 2,625,091 each sets forth an inventive advance made by the party Harry A. Pursche and there is no double patenting.

XV

Patent No. 2,633,786 sets forth an inventive advance by the party Harry A. Pursche over Patents Nos. 2,625,089; 2,625,090; and 2,625,091 and there is no double patenting.

XVI

Patent No. 2,659,284 sets forth an inventive advance by the party Harry A. Pursche over Patents Nos. 2,625,089; 2,625,090; 2,625,091; and 2,633,786 and there is no double patenting.

XVII

The claims of Patent No. 2,625,089 define a new and meritorious invention in a combination of elements; the elements are set out in the claims of said patent and said elements co-operate together in a manner where the sum of the functions performed exceed the functions of the individual elements.

XVIII

Claims 2 to 27 inclusive of Patent No. 2,625,090 define a new and meritorious invention in a combination of elements; the elements are set out in the claims of said patent and said elements cooperate together in a manner where the sum of the functions performed exceed the functions of the individual elements.

XIX

The claims of Patent No. 2,625,091 define a new and meritorious invention in a combination of elements; the elements are set out in the claims of said patent and said elements co-operate together in a manner where the sum of the functions performed exceed the functions of the individual elements.

XX

The claims of Patent No. 2,633,786 define a new and meritorious invention in a combination of elements; the elements are set out in the claims of said patent and said elements co-operate together in a manner where the sum of the functions performed exceed the functions of the individual elements.

XXI

The claims of Patent No. 2,659,284 define a new and meritorious invention in a combination of elements; the elements are set out in the claims of said patent and said elements co-operate together in a manner where the sum of the functions performed exceed the functions of the individual elements.

XXII

The party Atlas Scraper and Engineering Co. has infringed Claims 12, 13, 14, 15, and 16 of Patent No. 2,625,089 by the manufacture and sale of carriage-type two-way plows shown in Exhibit 18.

XXIII

The party Atlas Scraper and Engineering Co. has infringed Claims 2 to 27, inclusive, of Patent No. 2,625,090 by the manufacture and sale of carriage-type two-way plows in Exhibit 18.

XXIV

The party Atlas Scraper and Engineering Co. has infringed Claims 3, 10, 12, 18, 25, 26 and 27 of Patent No. 2,625,090 by the manufacture and sale of tractor mounted two-way plows shown in Exhibit 22.

XXV

The party Atlas Scraper and Engineering Co. has infringed Claims 6, 7, 8, 9, 14, 15 and 22 of Patent No. 2,625,091 by the manufacture and sale of carriage-type two-way plows shown in Exhibit 18.

XXVI

The party Atlas Scraper and Engineering Co. has infringed Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14 and 15 of Patent No. 2,633,786 by the manufacture and sale of tractor mounted two-way plows shown in Exhibit 22.

XXVII

The party Atlas Scraper and Engineering Co. has infringed Claims 3, 8, 10 and 15 of Patent No. 2,659,284 by the manufacture and sale of tractor mounted two-way plows shown in Exhibit 22.

XXVIII

This Court has jurisdiction of the claim for unfair competition because it is joined with the related claim under the patent statutes, United States Code, Title 28, Section 1338 (b).

XXIX

The party Atlas Scraper and Engineering Co. acted unfairly in concealing and failing to disclose to the party Harry A. Pursche development activities in two-way plows during the term of the license agreement, Exhibit 7; (Item B-19).

XXX

The party Atlas Scraper and Engineering Co. acted unfairly in concealing from the party Harry A. Pursche the filing of patent applications in the name of its employee, Roy L. Chandler relating to two-way plow improvements developed during the term of the license agreement, Exhibit 7, (Item B-19).

XXXI

Roy L. Chandler was employed by the party Atlas Scraper and Engineering Co. as an engineer and designer and improvements developed by him in the course of his employment came within the terms of Paragraph IX of the Pursche-Atlas agreement of April 3, 1948, Exhibit 7, (Item B-19).

XXXII

Failure of the party Atlas Scraper and Engineering Co. to assign to the party Harry A. Pursche inventions, improvements, modifications and betterments as required by Paragraph IX of the license agreement, Exhibit 7, (Item B 19), and the attempt to evade this requirement by concealing from and failing to disclose to the party Harry A. Pursche the patent applications filed in the name of Roy L. Chandler were in violation of said Paragraph IX and constituted unfair competition as to the party Harry A. Pursche.

XXXIII

The continued use by the party Atlas Scraper and Engineering Co. of developments of Roy L. Chandler so withheld did and does constitute unfair competition as to the party Harry A. Pursche.

XXXIV

The acts of the party Atlas Scraper and Engineering Co. in filing patent applications in the name of Roy L. Chandler, and Roy L. Chandler and another on inventions, improvements, modifications or betterments belonging to the party Harry A. Pursche under the license agreement, Exhibit 7, (Item B-19), constituted unfair competition.

XXXV

The inventions made by Roy L. Chandler during his employment by and under the direction of the party Atlas Scraper and Engineering Co. and at its sole cost and expense, were within the provisions of the agreement, Exhibit 7, (Item B-19), and in failing and refusing to transfer the said inventions to the party Harry A. Pursche, the party Atlas Scraper and Engineering Co. has competed unfairly with the party Harry A. Pursche.

XXXVI

The party Atlas Scraper and Engineering Co. having continuously used the developments, improvements and betterments in the gear rollover mechanism, Exhibit 44, and as shown in Figure 6 of Patent No. 2,830,519, Exhibit AR, subsequent to the terms of the agreement, Exhibit 7, (Item B-19), and in derogation of its obligations under said agreement has competed unfairly with the party Harry A. Pursche.

XXXVII

This Court lacks jurisdiction over the person of Roy L. Chandler and for that reason cannot decree nor order assignment to the party Harry A. Pursche of the entire right, title and interest to the gear type rollover mechanism of Exhibit 44, and as shown in Figure 6 of Patent No. 2,830,519, Exhibit AR, nor to the chain type tail wheel device, Exhibit 42, nor to the butterfly tail wheel device, Exhibits 33 and 51, nor to the British Patent No. 752,103, Exhibit AY, nor to Mexican Patent No. 56,332, Exhibit AZ, nor to Canadian Patent Application Serial No. 659,239

filed June 4, 1954, Exhibit BA, and the inventions covered thereby.

XXXVIII

The party Harry A. Pursche is entitled to an accounting and to a judgment for damages against the party Atlas Scraper and Engineering Co. for its use of the gear type rollover mechanism, Exhibit 44, and as shown in Figure 6 of Patent No. 2,830,519, Exhibit AR, the butterfly tail wheel device, Exhibits 33 and 51, and the chain type tail wheel device, Exhibit 42.

XXXIX

The party Atlas Scraper and Engineering Co. is an exclusive licensee in certain of the developments of Roy L. Chandler as set forth in the license agreement of November 1, 1957, Exhibit 43A.

XL

The party Harry A. Pursche is entitled to an injunction to prevent the party Atlas Scraper and Engineering Co. from making, using or selling the butterfly type tail wheel construction, Exhibits 33 and 51.

XLI

The party Harry A. Pursche is entitled to an injunction to prevent the party Atlas Scraper and Engineering Co. from making, using or selling the gear type rollover mechanism shown in Exhibit 44.

XLII

The party Harry A. Pursche is entitled to an injunction to prevent the party Atlas Scraper and Engineering Co. from making, using or selling the gear type rollover mechanism shown in Figure 6 of Patent No. 2,830,519, Exhibit AR.

XLIII

The party Harry A. Pursche is entitled to an injunction to prevent the party Atlas Scraper and Engineering Co. from making, using or selling the chain type tail wheel

construction shown in the Roy L. Chandler Patent No. 2,773,439, Exhibit 42.

XLIV

The party Harry A. Pursche is entitled to a judgment and to an injunction and an accounting as prayed for in the First Amended and Supplemental Complaint filed herein for infringement of said Letters Patent No. 2,625,089.

XLV

The party Harry A. Pursche is entitled to a judgment and to an injunction and an accounting as prayed for in the First Amended and Supplemental Complaint filed herein for infringement of said Letters Patent No. 2,625,090, except as to the Atlas plows of Exhibit 20 (Items B-3 and B-7), Exhibit 21 (Item B-4), and Exhibit 23 (Item B-6).

XLVI

The party Harry A. Pursche is entitled to a judgment and to an injunction and an accounting as prayed for in the First Amended and Supplemental Complaint filed herein for infringement of said Letters Patent No. 2,625,091.

XLVII

The party Harry A. Pursche is entitled to a judgment and to an injunction and an accounting as prayed for in the First Amended and Supplemental Complaint filed herein for infringement of said Letters Patent No. 2,633,786.

XLVIII

The party Harry A. Pursche is entitled to a judgment and to an injunction and an accounting as prayed for in the First Amended and Supplemental Complaint filed herein for infringement of said Letters Patent No. 2,659,284.

XLIX

The party Harry A. Pursche is entitled to a judgment and an accounting for unfair competition as set forth herein.

XLX

The party Atlas Scraper and Engineering Co. is entitled to a judgment on its Amended Complaint for Declaratory Relief, that the Atlas plows of Exhibit 20 (Items B-3 and B-7), Exhibit 21 (Item B-4), and Exhibit 23 (Item B-6), do not infringe any of the Pursche patents in suit.

Judgment

In accordance with the Findings of Fact and Conclusions of Law, it is hereby ordered, adjudged, and decreed:

I

That the party Harry A. Pursche is the owner of the entire right, title, and interest in and to United States Letters Patent No. 2,625,089, and such patent and each of the claims thereof are good and valid at law.

II.

That the party Harry A. Pursche is the owner of the entire right, title, and interest in and to United States Letters Patent No. 2,625,090, and such patent and claims 2 to 27, inclusive, thereof are good and valid at law.

III

That the party Harry A. Pursche is the owner of the entire right, title, and interest in and to United States Letters Patent No. 2,625,091, and such patent and each of the claims thereof are good and valid at law.

IV

That the party Harry A. Pursche is the owner of the entire right, title, and interest in and to United States Letters Patent No. 2,633,786, and such patent and each of the claims thereof are good and valid at law.

V

That the party Harry A. Pursche is the owner of the entire right, title, and interest in and to United States Letters Patent No. 2,659,284, and such patent and each of the claims thereof are good and valid at law.

VI

That the party Atlas Scraper and Engineering Co. has infringed Claims 12, 13, 14, 15, and 16 of Patent No. 2,625,089, by the manufacture and sale of carriage type two-way plows of Exhibit 18.

VII

That the party Atlas Scraper and Engineering Co. has infringed Claims 2 to 27, inclusive, of Patent No. 2,625,090, by the manufacture and sale of carriage type two way plows of Exhibit 18.

VIII

That the party Atlas Scraper and Engineering Co. has infringed Claims 3, 10, 12, 18, 25, 26, and 27 of Patent No. 2,625,090, by the manufacture and sale of tractor mounted two-way plows of Exhibit 22.

IX

That the party Atlas Scraper and Engineering Co. has infringed Claims 6, 7, 8, 9, 14, 15, and 22 of Patent No. 2,625,091, by the manufacture and sale of carriage type two-way plows of Exhibit 18.

X

That the party Atlas Scraper and Engineering Co. has infringed Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14, and 15 of Patent No. 2,633,786, by the manufacture and sale of tractor mounted two-way plows of Exhibit 22.

XI

That the party Atlas Scraper and Engineering Co. has infringed Claims 3, 8, 10, and 15 of Patent No. 2,659,284, by the manufacture and sale of tractor mounted two-way plows of Exhibit 22.

XII

That Claim 1 of Patent No. 2,625,090 is invalid as being broader than the invention.

XIII

That the party Harry A. Pursche have judgment on the First Amended and Supplemental Complaint for infringement of Claims 12, 13, 14, 15, and 16 of Patent No. 2,625,089.

XIV

That the party Harry A. Pursche have judgment on his First Amended and Supplemental Complaint for infringement of Claims 2 to 27, inclusive, of Patent No. 2,625,090, except as to the Atlas plows of Exhibit 20 (Items B-3 and B-7), Exhibit 21 (Item B-4), and Exhibit 23 (Item B-6).

XV

That the party Harry A. Pursche have judgment on his First Amended and Supplemental Complaint for infringement of Claims 6, 7, 8, 9, 14, 15, and 22 of Patent No. 2,625,091.

XVI

That the party Harry A. Pursche have judgment on his First Amended and Supplemental Complaint for infringement of Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14, and 15 of Patent No. 2,633,786.

XVII

That the party Harry A. Pursche have judgment on his First Amended and Supplemental Complaint for infringement of Claims 3, 8, 10, and 15 of Patent No. 2,659,284.

XVIII

That the party Harry A. Pursche have judgment on his First Amended and Supplemental Complaint for Unfair Competition to the extent set forth herein.

XIX

That the party Atlas Scraper and Engineering Co. have judgment on his Amended Complaint for Declaratory Relief that the Atlas plows of Exhibit 20 (Item B-3 and B-7), Exhibit 21 (Item B-4), and Exhibit 23 (Item B-6), do not infringe any of the Pursche patents in suit.

XX

That the party Harry A. Pursche is entitled to a perpetual injunction, and for the issuance of that injunction out of and under the seal of this Court, restraining the party Atlas Scraper and Engineering Co., its officers, agents, servants, employees, and those persons, companies, or corporations in active concert of participation with them from making, using, or selling two-way plows containing the inventions embodied in United States Letters Patent Nos. 2,625,089; 2,625,090; 2,625,091; 2,633,786; and 2,659,284, or any of them.

XXI

That the party Harry A. Pursche is entitled to a perpetual injunction, and for the issuance of that injunction out of and under the seal of this Court, restraining the party Atlas Scraper and Engineering Co., its officers, agents, servants, employees, and those persons, companies, or corporations in active concert or participation with them from making, using, or selling two-way plows embodying inventions, improvements, modifications, or betterment developed by and under the direction of the party Atlas Scraper and Engineering Co., its employees or agents, as defined and set forth in Exhibits 42, 44, 51, and the tail wheel and the rollover mechanism as shown in Figure 6 of Patent No. 2,830,519, Exhibit AR.

XXII

That the party Harry A. Pursche recover his damages herein by the reason of the infringement and unfair competition of the party Atlas Scraper and Engineering Co., and that this cause be referred to Theodore Hocke, Esq., as Special Master to take and report to the court an account of the damages due to the party Harry A. Pursche.

XXIII

That the party Harry A. Pursche recover from the party Atlas Scraper and Engineering Co., his damages herein by reason of the unfair competition of the party Atlas Scraper and Engineering Co., in its use of the inventions, improvements, modifications, and betterments as such are set forth and defined in Exhibits 42, 44, 51, and the tail wheel and the rollover mechanism of Figure 6 of Patent No. 2,830,519, Exhibit AR, subsequent to the termination of the agreement Exhibit 7 (Item B-19).

XXIV

Each party shall pay its own costs.

1/14/59.

/s/ Peirson M. Hall,
United States District Judge.

Approved as to Form: Lyon & Lyon, Lewis E. Lyon, John B. Young.

/s/ John B. Young,
Attorneys for Harry A. Pursche.

Approved as to Form: Whann & McManigal, R. Welton Whann, Robert M. McManigal.

/s/R. Welton Whann,
Attorneys for Atlas Scraper and Engineering Co.

Receipt of Copy acknowledged.

Lodged January 13, 1959.

[Endorsed]: Filed and entered January 14, 1959.

License Agreement, Exhibit 19

EXHIBIT No. 19

Agreement

This Agreement, made and entered into this 3rd day of April, 1948, by and between Harry A. Pursche, of Gardena, California, hereinafter referred to as Pursche, and Atlas Scraper and Engineering Co., a California corporation, of Bell, California, hereinafter referred to as Atlas:

* * * * * * *

IX

Any improvements upon, attachments to, or modifications of, the aforesaid identified inventions that may be made or acquired by Pursche while this agreement is in force are comprehended within the terms of this agreement, and will be available to Atlas free from the payment of any additional or further royalty or other compensation therefore; Atlas agrees, for itself and for its sub-licensees, to promptly and fully disclose to Pursche any and all inventions and improvements, modifications and betterments made, discovered or acquired by Atlas and/or its sub-licensees relating to the plow construction forming the subject matter of this agreement; and any and all such inventions, improvements, modifications and betterment upon the aforesaid plow construction made during the life of this agreement by or through the efforts of Atlas and/or its sub-licensees, or coming under the control of Atlas or its sub-licensees, shall belong to Pursche whether patentable or not and shall be properly assigned to Pursche by Atlas, free from any payment or compensation therefor, to the full extent of the interest of Atlas or its sub-licensees therein, and will be available to Atlas free from the payment of any additional or further royalty or compensation therefor; if Pursche desires to file and prosecute applications for letters patent thereon, Atlas will to the best of its ability endeavor to obtain and deliver to Pursche, his

heirs, executors, administrators, or assigns at his or their expense, the necessary assignments, applications, petitions, oaths, and instruments which Pursche shall deem necessary in order to apply for and obtain letters patent of the United States or foreign countries for the inventions, improvements, modifications, attachments and betterments so relating directly or indirectly to the plow construction forming the subject matter of this agreement, which inventions, improvements, modifications, attachments and betterments shall be and remain the sole and exclusive property of Pursche, his heirs, executors, administrators and assigns, whether patentable or not; all expenses of applying for and obtaining letters patent on said inventions, discoveries, and improvements shall be borne entirely by Pursche provided, however, in the event Pursche does not desire to file and prosecute paten applications on the same or any thereof, then Atlas shall have the right at its own cost and expense to file applications for letters patent upon such inventions, improvements, modifications, attachments and betterments upon which Pursche does not desire to file applications for letters patent, but notwithstanding the premises such inventions, discoveries, and improvements and any applications for letters patent and letters patent issued thereon shall be the sole and exclusive property of Pursche.

It is mutually understood and agreed that if any such inventions; improvements upon, attachments to, or modifications of the aforesaid identified inventions that may be made or acquired by Atlas while this agreement is in force and so assigned to Pursche are susceptible of use on devices not coming within the terms or scope of this agreement, Atlas shall have and is hereby given a royalty free, non-revokable, non-exclusive right and license to use the same on other devices not coming within the terms or scope of this agreement.

* * * * * * *

In Witness Whereof, Pursche has subscribed his name and affixed his seal, and Atlas has caused this agreement to be executed by its duly authorized officers as of the day and year first above written.

[Seal]

/s/ HARRY A. PURSCHE,

ATLAS SCRAPER AND ENGINEERING CO.

By /s/ CLAUDE B. OGLE,

President.

Attest:

/s/ LOLA F. OGLE,

Secretary.

(8447-5)

EXHIBIT NUMBER 42

Dec. 11, 1956 R. L. CHANDLER 2,773,439

PLOW TAIL WHEEL

Filed Nov. 30, 1953 2 Sheets-Sheet 1

Fig. 1.

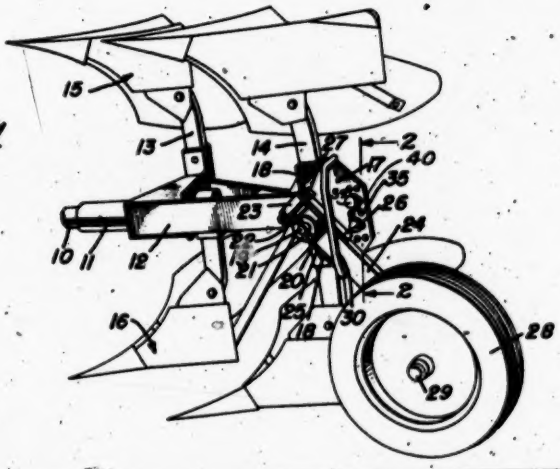


Fig. 2.

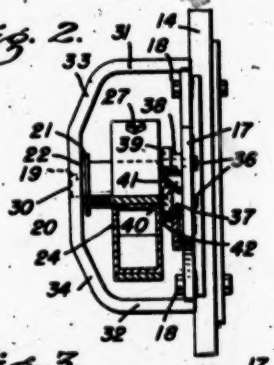


Fig. 4.

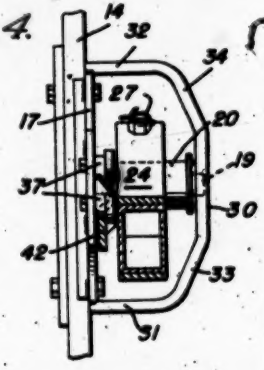
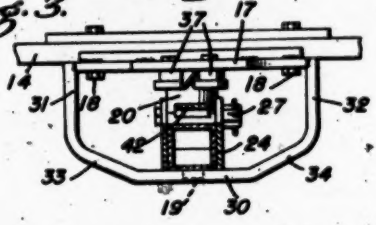


Fig. 3.



ROY L. CHANDLER
INVENTOR.

BY

ATTORNEY

Dec. 11, 1956 R. L. CHANDLER 2,773,439

PLOW TAIL WHEEL

Filed Nov. 30, 1953 2 Sheets-Sheet 2

Fig. 5.

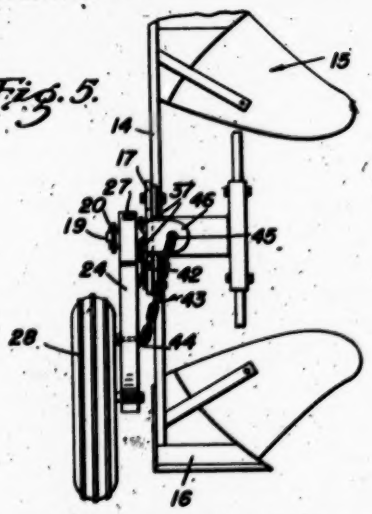


Fig. 6.

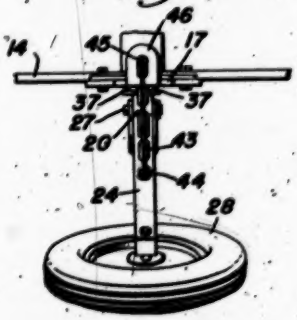


Fig. 7.

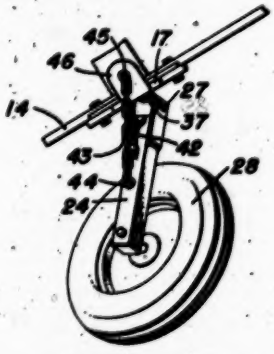
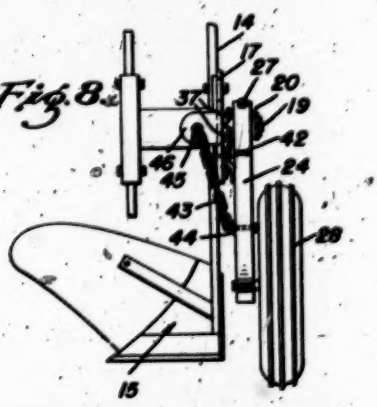


Fig. 8.



ROY L. CHANDLER
INVENTOR.

BY

ATTORNEY

United States Patent Office 2,773,439 Patented Dec. 11, 1956

2,773,439

PLOW TAIL WHEEL

Roy L. Chandler, Bell, Calif.

Application November 30, 1953, Serial No. 395,062

11 Claims. (Cl. 97—36)

The present invention relates generally to earth working equipment; and is more particularly concerned with a unique tail wheel construction for two-way type plows.

It has been known generally heretofore to utilize a single tail wheel with a rollover or plow carrying frame in a two-way plow construction, the tail wheel being supported on a swingable arm carried by the plow frame. In such conventional arrangements, however, it has been the practice to utilize stops for limiting the pivotal movement of the swingable arm, the arrangement being such that the limit positions of the arm were above and below the horizontal plane of the rollover frame. When the tail wheel is being utilized to adjust the plowing depth, this arm is inclined upwardly above the horizontal plane of the rollover frame. Thus, the axis of rotation of the tail wheel must necessarily be positioned above the rollover frame and necessitates using an extremely large heavy and bulky wheel.

With such conventional arrangements it has been the experience that upon shifting the plow from one side to the other, this pivoted arm and attached tail wheel are free to move under gravitational forces from one stop to the other, and as a result produce an extremely high impact force. Movement of the arm and tail wheel is terminated with a banging action of such force that the associated parts are subjected to damaging forces which require extra heavy construction, and often replacement of parts over extended periods of use.

With the foregoing in mind, the present invention contemplates a unique mounting for the tail wheel in which the supporting arm, during periods of use, projects below the plane of the rollover frame, thus permitting utilization of smaller tail wheels, and permitting material reduction in weight of the equipment.

A further object is to provide a tail wheel construction which embodies a unique arrangement for controlling the swinging movement of the tail wheel, when shifting the plows from one side to the other, and for determining the plowing depth in the plowing positions of the plow carrying frame.

Another object of the invention is to provide an adjustable tail wheel of simple construction; small size and light weight, and unique means for controlling the shifting and adjustment of the tail wheel to regulate the plowing depth.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed construction is for the purpose of fully disclosing the invention without placing limitations thereon.

Referring to the accompanying drawings, which are for illustrative purposes only:

Fig. 1 is a fragmentary perspective view of a two-way plow having a tail wheel construction embodying the features of the present invention;

Figs. 2, 3 and 4, are sectional views taken substantially on line 2—2 of Fig. 1, and operatively illustrating the successive changes in cooperative relationship of the tail

wheel supporting parts during change of plow bottoms from one side to the other;

Figs. 5, 6, 7 and 8, are fragmentary rear elevational views showing successive operating positions of the associated parts of a modified tail wheel construction according to the present invention, during change of the plow bottoms from one side to the opposite side.

Referring more specifically to the drawings, for illustrative purposes, the present invention is disclosed in Fig. 1 as being applied to a two-way plow construction which incorporates a supporting frame 10 which is normally associated with a draft mechanism (not shown). The draft mechanism also usually provides for tiltably raising the support frame so as to move the plow bottoms into the air and permit transportation of the plow from one point to another. In addition the draft mechanism ordinarily incorporates suitable means for actuating a rollover frame which in this instance is indicated as comprising a tubular structure 11 in concentric relation to the support frame 10, and which is shown as incorporating a plow supporting frame 12 or an equivalent structure suitable for supporting conventional standards such as indicated by numerals 13 and 14 respectively. These standards are arranged so as to project above the horizontal plane passing through the frame 12, and are adapted to carry at their ends sets of oppositely disposed plow bottoms 15 and 16 which may be selectively brought into relatively reversed positions of use by rotating the frame 13 with respect to the supporting frame 10. It will be observed that in the relatively reversed plowing positions, the standard 14 will be disposed on one side or the other of the axis of the supporting frame 10 and associated tubular structure 11.

As thus far described, the two-way plow may embody various constructions by which the two-way plow may be supported and arranged for shifting from one position of use to the other. The above described arrangement is merely exemplary of one form of construction. For illustrating the basic principles of the present invention, the supporting structure for the standard 14 is shown as including a plate 17 which is secured along its forward edge margin to the side of standard 14 as by suitable bolts 18—18 so as to project rearwardly therefrom.

Midway of the forward edge margin of the plate 17, there is provided a projecting stud 19 which serves as a pivotal mounting for a bracket 20 which is retained against endwise removal from the stud by a retaining washer 21 and a cotter pin 22.

The bracket 20 has a side projection 23 which forms a pivotal support or one end of an arm 24 fitted at this end with spaced straps 25 and 26 which form spaced leg extensions passing respectively on opposite sides of the stud 19 and associated bracket, these legs being pivotally secured to the side projection by a suitable pivot bolt 27.

The stud 19 and pivot bolt 27 form a universal pivot connection for the arm 24, the stud 19 and pivot bolt 27 being in right angled relation to each other. Thus, the stud 19 permits swinging movement of the arm 24 through one plane, while the pivot bolt 27 enables swinging movement of the arm 24 in a plane at right angles to the other plane of swinging movement. The outer end of the arm 24 has rotatably supported thereon a tail wheel, this wheel being supported upon a suitable spindle 29 which projects from the opposite side of the arm from that on which the plate 17 is located.

Swinging movements of the arm 24 are confined to predetermined limits by the associated action of a rail member 30 and the plate 17. As more clearly shown in Fig. 2, the rail 30 is of substantially U-shaped construction with right angle end legs 31 and 32 which are secured at their end termination respectively to the top

and bottom edges of the plate 17 as by welding or other conventional means, so as to straddle the arm 24. The legs 31 and 32 respectively connect with adjacent angular portions 33 and 34 which are arranged to swing the arm 24 about the pivot bolt 27 in a direction towards the plate 17, when pivotal movement of the arm about stud 19 is such as to approach either leg 31 or 32. The purpose of this movement will be explained subsequently in detail.

Referring again to Fig. 1, the plate 17 is provided along its rear edge margin with a series of apertures 35 which are adapted to receive securing bolts 36, Fig. 2, by which stop lugs 37 may be secured in predetermined selected positions projecting towards the swingable arm 24. The stop lugs 37 are of generally circular configuration and have a shank portion 38 which is enlarged at one end to form a head portion 39. The shank portion and head portion are interconnected along one side of the lug by a projecting web 40, the outer edge 41 of which is inclined. Affixed to the adjacent side of the arm 24 is a strap member 42 which is anchored at its ends to the arm 24 as by welding or by other suitable means, and intermediate its ends is spaced from the adjacent surface of the arm 24 so as to abut the shank portion of one of the stop lugs 37 and extend under the head portion 39 thereof, when the arm 24 is adjacent the plate 17 and swung upwardly during beginning of a plowing operation until the engaged lug determines the plowing depth and prevents further upward movement of the wheel 28. The inclined edges 41 of the lugs are positioned in confronting relation, as shown in Fig. 1, so that when the lugs are in spaced apart relation, the strap member will ride over the head portion and not become engaged under the confronting sides of the lugs and thus produce abnormal operation.

Referring to Figs. 2, 3 and 4, it is believed that the operation of the tail wheel and the movements of its component parts when changing from one plowing position to the other will be clearly evident from a consideration of the successive illustrations. As shown in Fig. 2, the strap member 42 is shown as being engaged under the head of the lowermost stop lug 37 so as to thus determine the plowing depth.

When it is desired to reverse the plows, for example, to change from the position shown in Fig. 1 to a reversed position, the support frame is raised sufficiently to clear the plows. In so doing, the arm 24 will drop to the position shown in Fig. 1, wherein it engages the end leg 32. Now as the plow supporting frame is rotated in a counterclockwise direction, as viewed in Fig. 2, it will pass through an intermediate position as shown in Fig. 3, wherein the rail 30 extends downwardly. Under such conditions, the action of gravity on the wheel 28 will cause the arm 24 to swing downwardly about the pivot bolt 27 until the arm is limited in its movement by the rail 30. In this position, it will be seen that the strap member 42 is free for swinging movement with the arm, and that the path of movement of the arm clears the stop lugs 37 so that as the plow supporting frame is brought to the reversed plowing position, as shown in Fig. 4, the weight of the wheel 28 will cause the arm 24 to move towards leg 31.

As the arm 24 swings downwardly, it will engage the angular section 33 which will act to move the arm 24 about pivot bolt 27 in a direction to carry the strap member 42 to a position adjacent the plate 17 and below the lowermost lug 37 thereon. It will thus be apparent that as the plow supporting frame is lowered to cause the plows to penetrate, the arm 24 will move upwardly until the strap member 43 abuts the lug and limits upward movement to the desired plowing depth, as shown in Fig. 4. The parts of the tail wheel and supporting mechanism will operate in a similar manner in reversing the plowing operation.

From the foregoing, it will be apparent that by positioning the arm 24 outside of the adjusting lugs rather than between the adjusting lugs, it is possible to have the arm 24 inclined downwardly from the plane of the plow supporting frame, during plowing operation, and as a result a smaller tail wheel may be utilized.

Referring now to Figs. 5, 6, 7 and 8, a modified arrangement is shown which differs from the previously described construction primarily in that the rail 30 has been eliminated. Instead, a flexible member, in this case a chain 43 is utilized. One end of this chain is secured to the arm 24 by means of an eye bolt 44, while the other end is anchored by means of an eye bolt 45 to a projecting bracket 46 secured to the plate 17 and projecting at right angles thereto.

The utilization of a chain provides a simple economical arrangement for accomplishing the same results as previously described. This chain permits the arm 24 during swinging movement of the plow supporting frame from one plowing position to the other to follow a path which will be free of the stop lugs 37, as shown in Fig. 7.

At the plowing positions of the plow supporting frame, as shown in Figs. 5 and 8, the chain 43 and the gravitational forces due to the weight of the wheel 28 and its being offset to one side of the arm 24 will cause the arm to move into a position which will bring the strap member 42 into desired position under the adjacent lug 37.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention, and, hence, I do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims.

I claim:

1. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame so as to pivot about a first axis and a second axis, the first axis being disposed transversely with respect to said horizontal axis, and the second axis being at right angles to said first axis; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages the arm to limit its upward swinging about the first axis to a path generally below the horizontal axis; and means carried by said frame to limit combined outward and downward swinging movement of said arm about said first and second axis under the force of gravity to a position beyond the plane of said spaced stops, and to cause the arm to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction.

2. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame for universal swinging movements; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages the arm to limit its upward swinging through a path generally below the horizontal axis; and means carried by said frame to limit combined outward and downward swinging movement of said arm under the force of gravity to a position beyond the plane of said spaced stops, and to cause the arm to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction.

3. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side

of said frame for universal movements; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages the arm to limit its upward swinging to a path generally below the horizontal axis; and a flexible member connected between said frame and said arm to limit combined outward and downward swinging movement of said arm under the force of gravity to a position beyond the plane of said spaced stops, and to cause the arm to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction.

4. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame for universal swinging movements; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages the arm to limit its upward swinging to a path generally below the horizontal axis; and a chain member connected between said frame and said arm to limit combined outward and downward swinging movement of said arm under the force of gravity to a position beyond the plane of said spaced stops, and to cause the arm to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction.

5. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: a wheel; a support for said wheel; means connecting said support to one side of said frame so as to pivot about a first axis disposed transversely with respect to said horizontal axis; an element connected to said support so as to pivot with said support on said first axis, and pivot on a second axis at right angles to said first axis; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages said element to limit its upward swinging movement and the upper swinging movement of said wheel to a path generally below the horizontal axis; and means carried by said frame to limit combined outward and downward swinging movement of said element about said first and second axis under the force of gravity to a position beyond the plane of said spaced stops, and to cause the element to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction.

6. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: a wheel; a support for said wheel; pivot means connecting said support to one side of said frame for universal swinging movements; an element connected to said support so as to pivot therewith; adjustable vertically spaced stops carried by said one side of said frame so arranged that in each operative position of the frame the then lowermost stop engages said element to limit its upward swinging movement and the upper swinging movement of said wheel to a path generally below the horizontal axis; and means carried by said frame to limit combined outward and downward swinging movement of said element under the force of gravity to a position beyond the plane of said spaced stops, and to cause the element to swing back into the plane of and below the spaced stops as the frame approaches the end of its rotational movement in either direction.

7. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame for pivotal swinging movements about a first axis transverse to said horizontal axis; adjustable vertically spaced stops carried by said one side of said frame; stop engaging means movable with said arm and pivotally supported for swinging movements about an axis at an angle to said first axis; and means limiting said pivotal movements so that the stop engaging means will move under the force of gravity to a position out of a path of engagement with said spaced stops during movement of the frame from one of said sides to the other, and into a path of engagement below the lowermost of said stops as the frame approaches the end of its rotational movement in either direction.

8. In a two-way plow having a plow carrying frame supported for rotation from side to side on a substantially horizontal axis, a ground contacting wheel structure comprising: an arm; a wheel rotatably carried by said arm; pivot means connecting said arm to one side of said frame for pivotal swinging movements about a first axis transverse to said horizontal axis; adjustable vertically spaced first members carried by said one side of said frame; a second member movable with said arm; means supporting said first members and said second member for limited relative movements under the force of gravity to positions out of a path of engagement during movement of the frame from one of said sides to the other, and into a path of engagement of said second member and the lowermost of said first members as the frame approaches the end of its rotational movement in either direction.

9. A claim according to claim 2, wherein said means includes a rail member.

10. A claim according to claim 2, wherein said means includes a rail member having spaced angularly extending portions for guiding said arm movement in a direction towards the plane of said stops.

11. A claim according to claim 2, wherein said means includes a rail member having an intermediate portion for guiding the movement of said arm in said position beyond the plane of said stops, and an angularly extending portion adjacent each end of the intermediate portion for guiding said arm in its movement to said position in the plane of said stops.

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EXHIBIT NUMBER 44

Dec. 24, 1957 R. L. CHANDLER 2,817,241

ACTUATING MECHANISM

Filed May 29, 1952 2 Sheets-Sheet 1

Fig. 1.

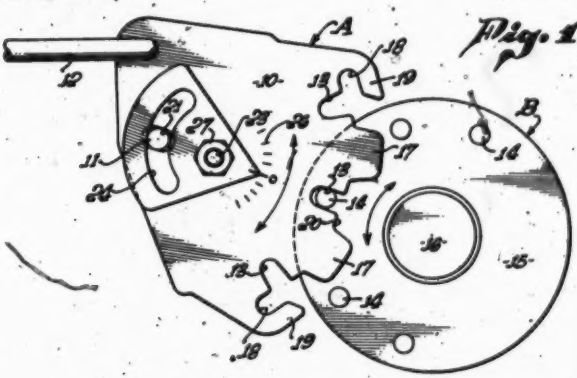


Fig. 2.

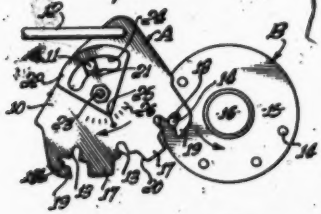


Fig. 3.

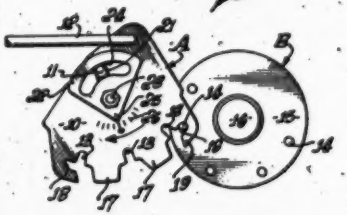
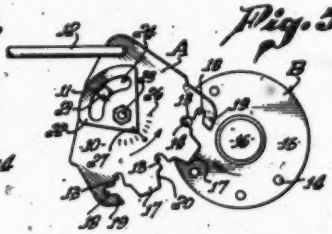


Fig. 4.

Fig. 5.



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BY

ATTORNEY.

Dec. 24, 1957 R. L. CHANDLER 2,817,241

ACTUATING MECHANISM

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Fig. 6.

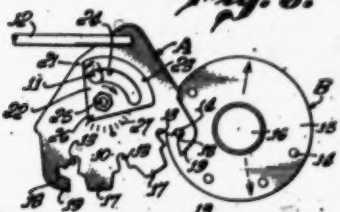


Fig. 7.

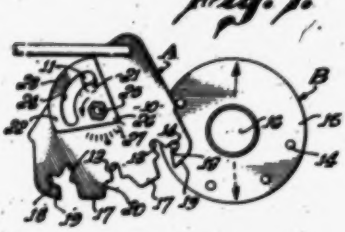
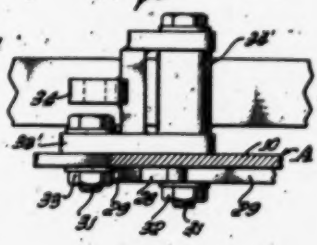


Fig. 8.

Fig. 9.



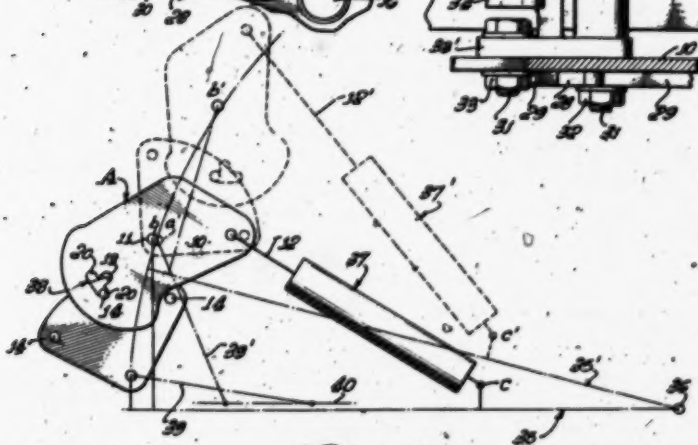


Fig. 10.

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United States Patent Office 2,817,241 Patented Dec. 24, 1957

2,817,241

ACTUATING MECHANISM

Roy L. Chandler, Bell, Calif.

Application May 29, 1952, Serial No. 290,737

19 Claims. (Cl. 74—96)

The present invention relates generally to an actuating mechanism having general application; and is more particularly concerned with a device by means of which a driven member or structure may be moved between predetermined limits by a driving member, and upon being moved to a limiting position is locked against independent movement, but which may be moved in a reversed direction away from the locked position at any time by means of the driving member.

It is one object of the invention to provide an actuating mechanism of the herein described character for moving structures with a rotary motion, usually through a partial revolution between limiting positions. Such a mechanism is susceptible of wide and varied uses. For example, the invention may be utilized in connection with charging and dumping equipment, tilting of platform and frame structures, raising and lowering of various types of tools, axially rotating a tool carrier to position a carried tool, and the like.

Still another object is to provide a novel tilting mechanism which may be mounted upon and carried by a tiltable structure, and which includes an expansible and contractable power link.

It is also an object to provide an actuating mechanism by means of which a driving member may be actuated to move a driven member through a limited rotation, and yet includes a driving connection which is so arranged that the driven member may be locked against reversed movement at points intermediate the limiting positions.

A further object resides in the provision of a novel actuating mechanism having unique means for adjusting the extent of limited movement between a driving and driven member.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing several embodiments of the invention without placing limitations thereon.

Referring to the accompanying drawings, which are for illustrative purposes only:

Fig. 1 is a view showing an actuating mechanism embodying the features of the herein described invention, the parts being shown in intermediate or mid-position of operation;

Fig. 2 is an operating view showing the driven member in stopped position;

Fig. 3 is a similar view showing the locked position of the driven member;

Fig. 4 is a similar view showing the released position of the driven member;

Fig. 5 is a view illustrating the beginning of reversed movement of the driven member;

Figs. 6 and 7 are views illustrating the adjustment of the mechanism for small and large limits of movement of the driven member, respectively;

Fig. 8 is a view illustrating modified means for adjusting the limits of angular movement of the driven member;

Fig. 9 is a fragmentary sectional view, taken substantially on line 9—9 of Fig. 8; and

Fig. 10 is a modified arrangement as used for actuating a tiltable structure, and including a power expansible and contractable linkage.

For illustrative purposes, the actuating mechanism of the present invention is disclosed in Fig. 1 as comprising a driving member A and a driven member B which are interconnected in a manner to be subsequently explained so that pivotal movements of the driving member will operate to cause pivotal movement of the driven member, in the present instance through a partial revolution extending between limiting positions.

More specifically, the driving member is shown as embodying a substantially triangular plate 10, although plates of other configurations in certain arrangements may be utilized.

The plate 10 is supported for pivotal movement upon a fixed pivot 11, and has connected thereto an actuating link 12 which is connected with a suitable power device, such as a hydraulic cylinder (not shown).

On the opposite side of the pivot 11, from that on which the link 12 is connected, the plate 10 is formed with a curved edge which is provided with spaced indentations 13 which extend generally in a radial direction from the pivot 11 and open outwardly for driving cooperation with suitable projections, such as the pins 14 which are circumferentially spaced on a marginal section of the driven member, the driven member in this instance being shown as comprising a disc 15 which may be carried by a shaft 16.

The spacing between the indentations 13 defines spaced lobes 17 which are adapted to successively extend between the pins 14 of the driven member, when the driving member is rotated. Concerted movement of the driving and driven members is limited by providing at each end indentation 13 on the plate member 10 a laterally extending notch 18 which results in the formation of a hook-shaped finger 19 for arresting movement of the members at the limit positions. Moreover, it will be observed that the outer end portions of the lobes 17 are in each case reduced in width so as to provide edge shoulders 20 at the entrances to the indentations 13, for a purpose which will be explained subsequently.

It is believed that the operation of the actuating mechanism as thus far described will be more clearly understood by reference to Figs. 2 to 5 inclusive of the drawings. As shown in Fig. 1, the driving member A and driven member B are shown in an intermediate or mid-position between their limits of movement, in which case one of the pins 14 is seated in the central or middle indentation 13 of the driving member. From this point, of course, the driving member may be rotated in either direction to cause a corresponding movement of the driven member. For purposes of illustration, let it be considered that the driving member is pivotally moved clockwise by applying a suitable operating force to the link 12. As a consequence the driven member will be pivoted in a counterclockwise direction until it reaches a stopped position as shown in Fig. 2. In this position, it will be seen that the associated pin 14 has moved out of the last indentation 13 and is beginning to move behind the associated finger 19. Continued movement of the driving member A will not result in additional movement of the driven member, but will only be effective in seating the pin 14 in the bottom of the notch 18 in which it is positioned, as shown in Fig. 3. Thus further concerted movement of the driving and driven members in the direction under consideration is prevented.

The relative positions of the driving and driven members, as shown in Fig. 3, constitute a locked position, since the pin 14 is seated in the notch 18 so that the

independent movement of the driven member in either a clockwise or counterclockwise direction is prevented. However, reversed movement of the driven member is readily accomplished by actuation of the driving member in a counterclockwise direction as clearly indicated in Fig. 4.

As shown in Fig. 4, counterclockwise movement of the driving member causes relative movement of the pin 14, which is in the notch 18, so that it is now positioned at the entrance to the associated adjacent indentation 13, as shown. At the same time, the leading edge of the plate 10 is moved against the end pin 14, whereupon the disc 15 will start to move in a clockwise direction, and the pin 14 will enter the adjacent indentation 13, this position being shown clearly in Fig. 5. If the driving member A movement is continued in a counterclockwise direction, the driven member B will continue to be moved in a clockwise direction until the other limit of movement is reached, whereupon the same locking and limiting operation becomes effective.

Although only the locking operation has thus far been explained which takes place at the limits of movement, provision is also made for locking the driven member against independent reversed direction of movement at other points between the limit positions, as will now be explained. Assuming for example that the driving member and driven member are in the intermediate or mid-position, as shown in Fig. 1, it will be observed that upon moving the driving member, in either direction, the pin 14 which is in the indentation 13 will be carried to a position where it is over a shoulder 20. At such position, the shoulder 20 acts to lock the associated pin 14 against reversed movement by independently endeavoring to pivot the driven member.

The mechanical movement as described in the foregoing is adapted for general application, and due to the limiting and locking feature, the movement is especially useful in connection with charging equipment, tool carriers, etc., wherein it is usually desired to utilize a limited movement, and wherein the parts are locked against reverse movement, except by operation of the driving member. It will, of course, be appreciated that the driving and driven members may be readily designed to obtain whatever limited pivotal movement is desired. However, for a predetermined limited movement, installation conditions may require slight increase or decrease of such limited movement. In the disclosed embodiment of the invention, such adjustment is accomplished in a unique manner by an arrangement which will now be described, wherein the pivot 11 may be relatively moved with respect to the plate 10 so as to vary the effective operating lever arms between the pivot 11 and the connection of link 12 to the plate, and between the pivot 11 and the engaged pin 14 of the disc 15.

More specifically, this adjusting feature is accomplished by positioning the pivot 11 within an elongate slot 21, as shown in Fig. 1. The position of the pivot 11 within the slot 21 is adjusted by means of a swingable cam plate 22 which is pivotally mounted on the plate 10 by a pivot member 23. The cam plate 22 has an arcuate cam slot 24 which is eccentrically positioned with respect to the pivot member 23. The pivot 11 also extends into the slot 24, so that by pivotal adjustment of the cam plate 22, the pivot 11 can be relatively shifted within the slot 21.

As an aid to the adjustment of the position of the pivot 11 within the slot 21, an indicating mark, as shown at 25, is provided on the plate 22, and this mark is associated with an arcuate scale 26 on the plate 10. In the disclosed example, the adjustment of the cam plate 22, which corresponds with the mid-position of the pivot 11 in the slot 21, is indicated by a "zero." Thus, adjustments of the pivot 11 either way from the mid-position in the slot 21 will be indicated by the gradu-

tions of the scale 26. Suitable means may be provided for securing the cam plate 22 in adjusted position. In the present instance, the pivot member 23 has been shown as comprising a bolt having an associated nut 27 to permit loosening for adjustment and tightening to retain the cam plate 22 in adjusted position.

Referring to Figs. 6 and 7, the respective positions of the cam plate 22 are shown for obtaining the smallest angle of pivotal movement of the driven member B, and the largest angle of movement of the driven member B.

The foregoing arrangement for adjusting the angular movement of the driven member is not adapted for use in those cases where it is desired or necessary to utilize a constant non-variable movement of the power actuating device, and yet be able to obtain different angular movements of the driven member. For example, if the power device has motion limiting means such as limit switches, etc. then the operating lever arm between the pivot 11 and the connection of link 12 to the plate should not properly be varied as in the arrangement previously described, but should be maintained of constant length.

An arrangement incorporating the latter feature is shown in Fig. 8, wherein it will be noted that instead of utilizing a pivoted cam plate 22, a substantially rectangular plate 28 is supported on the surface of plate 10 for end-to-end reciprocable movements between spaced guide rails or strips 29 which are welded or otherwise suitably secured to the plate 10.

The plate 28 is arranged with an elongate slot 30 which angularly intercepts one of the two relatively short parallel slots 31—31 in the plate 10 and cooperates therewith to provide registering openings for receiving a pivot pin 32. A bolt 33 is positioned in the other slot 31 and cooperates with pin 32 to secure the plate to a bracket 33' having a power coupling lug 34 projecting therefrom to which the previously described link 12 may be connected. Pin 32 constitutes in this case the pivot support for the plate 10, the pin being rotatable in a suitable stationary bearing 34' carried by the adjacent frame structure.

With this arrangement, it will be seen that end-to-end adjusting movements of the plate 28 will cause the pin 32 and bolt 33 to be simultaneously shifted along their associated slots 31. In so doing, the length of the lever arm between the pivot 32 of plate 10 and the point of power connection by link 12 to power lug 34 will be maintained at a constant value, while the distance from the pivot 32 of plate 10 to the engaged pin 14 of the driven member will be varied so as to change the angular movement of the driven member.

Referring now to Fig. 10 of the drawings, a modified embodiment of the invention will now be described in which the mechanical movement together with an expansible and contractable power link are mounted on a structure, such as a tiltable platform, for adjusting its position; the mechanical movement and parts being carried by the structure.

As schematically illustrated in Fig. 10, the structure is indicated by the numeral 35, and is supported for tilting or swinging movement about a pivot point 36. The structure has three pivotal centers *a*, *b*, and *c* fixedly positioned thereon in generally triangular relationship.

In this modified arrangement, similar numerals, where possible, have been utilized to indicate elements which correspond with those previously described. Instead of the driven member being associated with a shaft as in the previous arrangement, in the present instance the driven member B is supported for pivotal movement on a suitable pivotal support at the pivot center *a*. The driving member A is pivotally supported on its pivot 11 at the pivot center *b*, and the link 12 in this case connects the driving member with a hydraulic power cylinder 37 which has its other end connected with the pivotal center

c. An expansible and contractable linkage is therefore operative to actuate the driving member A.

In the modified arrangement, the driving member A is provided with a T-slot as generally indicated at 38 which, in this case, defines the recess or indentation 13 and shoulders 20—20 as previously explained. The T-slot is associated with a pin 14 as previously explained, and the driving connection in this case operates in the same manner as in the previously described arrangement, except that the angle of movement of the driving and driven members is reduced.

The present arrangement additionally includes a projecting member or arm 39 which is relatively fixed with respect to the driven member and is rotatable therewith. The outermost end of this arm is arranged to bear or slidingly engage a support or surface as generally indicated by the numeral 40. As shown, the horizontal position of the structure 35, and the operative position of the actuating mechanism elements are shown in full lines, while the tilted or shifted position has been illustrated in dotted lines with the parts indicated by primed numbers.

Briefly the operation of the modified arrangement will be as follows: assuming that the parts are as shown in full line position, it will be noted that the structure is locked against movement due to the location of the pin 14 in the T-slot, except by actuation of the driving member A. In this position, it will be noted that the arm 39 makes a very acute angle with the surface 40.

The structure 35 may now be tilted by activating the hydraulic power cylinder 37 so as to cause an expansion of the linkage between pivot center c and the connection of link 12 with the driving member A. This action causes the driving and driven members to swing about their pivots, during which movement the pin 14 passes into the indentation 13 at the mid-position of the members, and as the movement continues the pin 14 passing into the opposite end of the T-slot above the associated shoulder 20. At both positions of operation of the driving and driven members, these members are locked as previously explained.

During the foregoing actuation of the driving member A, the arm 39 is likewise shifted so that it is moved to an obtuse angular position 39', with reference to the surface 40, and the other parts of the actuating mechanism are carried along with the structure 35 to its position 35', wherein the parts of the actuating mechanism are shown in dotted lines. The driving and driven members are locked in this position.

In order to return the structure 35' to full line position, the connecting linkage is contracted by energizing the hydraulic power cylinder so that it operates to shorten the linkage.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention, and, hence, I do not wish to be restricted to the specific form or forms as shown or uses mentioned, except to the extent indicated in the appended claims.

I claim:

1. An actuating mechanism, comprising: a pivotally mounted driving member having a plurality of peripheral lobes separated by inwardly extending indentations; a pivotally mounted driven member having spaced projections adjacent its periphery adapted to successively enter said indentations upon concerted movement of said members; hook means carried by one of said lobes engageable with a pin entering an adjacent indentation, initial engagement with the pin acting to arrest further pivotal movement of the driven member, and further movement of the driving member moving the hook to a locking position restraining the driven member against independent reversal of said pivotal movement, but enabling reversed driving movement by said driving member.

2. An actuating mechanism, comprising: a pivotally mounted driving member having a plurality of peripheral lobes separated by inwardly extending indentations; a pivotally mounted driven member having spaced pins adjacent its periphery adapted to successively enter said indentations upon movement thereof; and a hook carried by one of said lobes for lockingly engaging a pin entering an adjacent indentation upon pivotal movement of the driving member and restraining independent pivotal movement of the driven member, but enabling reversed movement by said driving member.

3. An actuating mechanism, comprising: a pivotally mounted driving member having a plurality of peripheral lobes separated by inwardly extending indentations; a pivotally mounted driven member having spaced pins adjacent its periphery adapted to successively enter said indentations upon movement thereof; and hook means carried by one of said lobes for engaging a pin entering an adjacent indentation, whereby continued movement of the driven member is arrested.

4. An actuating mechanism, comprising: a pivotally mounted driving member having a peripheral section containing a plurality of lobes separated by inwardly extending indentations; a pivotally mounted driven member having spaced pins adjacent its periphery adapted to enter the indentations between said lobes and form a motion transmitting connection between said members; and lateral notches in the indentations respectively adjacent the ends of said section for lockingly receiving a pin therein so as to limit continued movement of said members beyond the limits of said section.

5. An actuating mechanism, comprising: a pivotally mounted driving member having a peripheral section containing spaced lobes; a pivotally mounted driven member having spaced pins adjacent its periphery adapted to enter the spaces between said lobes and form a motion transmitting connection between said members; and means at the opposite ends of said peripheral section for respectively engaging one of said pins so as to limit continued movement of said driven member.

6. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively, the driving member having a slot in which its pivot is laterally shiftable; means for limiting the concerted movement of said members; a cam member movably mounted on the driving member having a cam slot in which said pivot is positioned, movement of the cam member acting to shift said pivot and regulate the relative amounts of pivotal movement of the driving and driven members, and means associated with said cam member for indicating its position of adjustment.

7. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively, the driving member having a slot in which its pivot is laterally shiftable; means for limiting the concerted movement of said members; and a cam member movably mounted on the driving member having a cam slot in which said pivot is positioned, movement of the cam member acting to shift said pivot and regulate the relative amounts of pivotal movement of the driving and driven members.

8. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; means carried by said members movable into a pivotal movement limiting and locking position upon concerted pivotal movement of said members a predetermined extent; and a cam adjustable to relatively shift the driving member and its pivot mounting, so as to regulate the relative amounts of pivotal movement of said members.

9. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; means carried by said members movable into a pivotal movement limiting and locking position upon concerted pivotal

movement of said members a predetermined extent; and means carried by one of said members for regulating the relative amounts of pivotal movement of said members.

10. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; and mutually co-acting parts carried by said members movable into a position limiting and locking said driven member against continued or reversed pivotal movement, upon pivotal movement of said members a predetermined extent.

11. An actuating mechanism, comprising: a pivotally mounted driving member; a pivotally mounted driven member; a motion transmitting connection between said members including an indentation in one of said members; a pin carried by the other of said members movable into and out of said indentation during concerted movements of said members by the driving member; and an offset shoulder engageable by said pin for locking the pin against reversed independent movement by its associated member.

12. The combination with a structure supported for tilting movement about a pivot, of actuating mechanism for moving said structure between angularly related positions, said mechanism comprising: three relatively fixed pivotal centers on said structure; a pair of members mounted for pivotal rotation respectively about two of said centers and interconnected to form a driving member and a driven member; an arm connected at one end to the driven member for rotation therewith, and at its other end having a swingable connection with a support; and a variable length link having pivotal end connections respectively with the third pivotal center and the driving member, whereby length variations in said link will actuate said driving and driven members and angularly move said structure.

13. The combination with a structure supported for tilting movement about a pivot, of actuating mechanism for moving said structure between angularly related positions, said mechanism comprising: three relatively fixed pivotal centers on said structure; a pair of members mounted for pivotal movement respectively about two of said centers and interconnected to form a driving member and a driven member; an arm connected at one end to the driven member for movement therewith and at its other end having a swingable connection with a support; a variable length link having pivotal end connections respectively with the third pivotal center and the driving member, whereby length variations in said link will actuate said driving and driven members and angularly move said structure; and motion limiting means carried by said members cooperative upon predetermined movement thereof to lock the driven member against independent movement, but enable reversed movement thereof by said driving member.

14. The combination with a structure supported for tilting movement about a pivot, of actuating mechanism for moving said structure between angularly related positions, said mechanism comprising: three relatively fixed pivotal centers on said structure; a pair of members mounted for pivotal movement respectively about two of said centers and interconnected to form a driving member and a driven member; an arm connected at one end to the driven member for movement therewith and at its other end having a swingable connection with a support; and a variable length link including hydraulic power cylinder means having pivotal end connections respectively with the third pivotal center and the driving member, whereby length variations in said link will actuate said driving and driven members and angularly move said structure.

15. The combination with a tiltable structure of mechanism carried thereby for angularly shifting said structure with respect to a reference surface, comprising: three pivotal centers in triangular relationship carried by said structure; a driving member pivoted at one of said centers; a driven member pivoted at another of said centers and having an extension in engagement with said surface; a driving connection between said members; and a power expansible and contractable link for actuating said driving member, said link being connected at one end to the remaining center and at its other to the driving member, whereby the driven member may be pivoted in opposite directions to tiltingly move said structure by changing the position of said extension.

16. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; a power actuating connection to said driving member; and means adjustable to shift the power actuating connection and pivot of the driving member while maintaining a constant spacing between said connection and driving member pivot to a plurality of positions.

17. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively, the driving member having a slot; means for connection with a power actuating device, said means being laterally shiftable in said slot and including a pivot for the driving member; and camming means carried by the driving member for adjustably shifting said means.

18. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively, the driving member having a pair of spaced parallel slots; a pivotally mounted power connection bracket forming a pivotal support for the driving member, said bracket being supported so as to be laterally shiftable in said slots; and a plate supported on said driving member for endwise adjustable movements, said plate having a slot crossing one of the slots in the driving member at an angle and adapted to adjustably position the bracket with respect to said driving member.

19. An actuating mechanism, comprising: a pair of pivotally mounted members interconnected to form a driving member and a driven member respectively; means mounting the pivot of the driving member for relative lateral movement with respect to the driving member to a plurality of fixed operating positions; a power actuating connection to said driving member; and means adjustable to shift the pivot of the driving member to said positions to selectively vary the driving ratio between said members and the consequent relative pivotal movement of the driven member.

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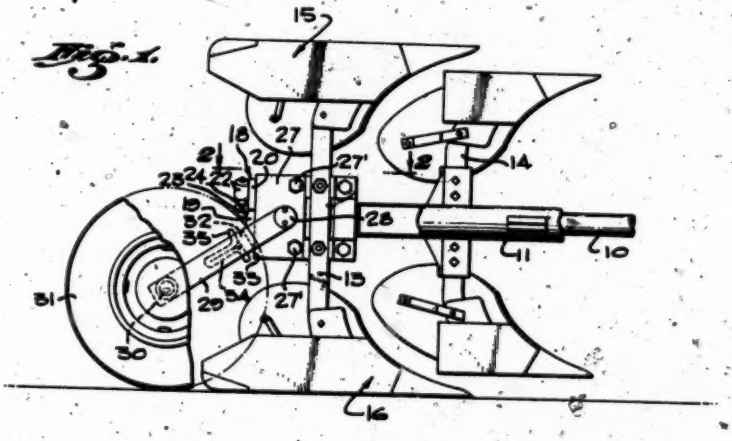
EXHIBIT NUMBER 51

July 8, 1958 R. L. CHANDLER 2,842,038

PLOW TAIL WHEEL CONSTRUCTION

Filed Feb. 2, 1953 2 Sheets-Sheet 1

Fig. 1.



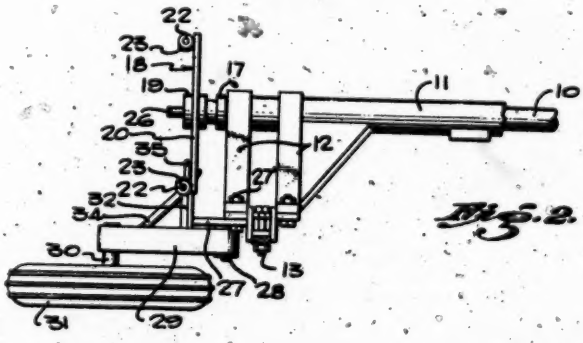


Fig. 2.

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PLOW TAIL WHEEL CONSTRUCTION

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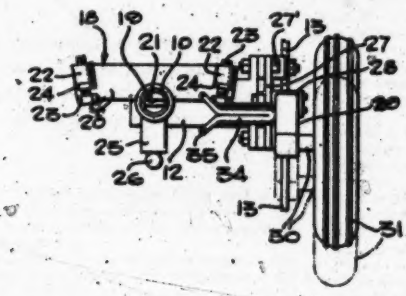

Fig. 3.

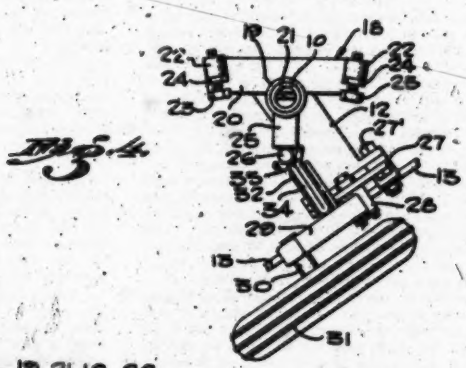

Fig. 4.

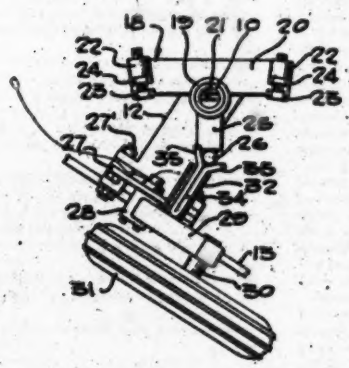

Fig. 5.

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United States Patent Office

2,842,838

Patented July 8, 1958

2,842,838

PLOW TAIL WHEEL CONSTRUCTION

Roy L. Chandler, Bell, Calif.

Application February 2, 1953, Serial No. 334,578

12 Claims. (Cl. 97—36)

The present invention relates generally to earth working equipment, and is more particularly concerned with a novel tail wheel construction for plows, especially plows of the two-way type.

It has been generally known heretofore to utilize with a rollover frame in a two-way plow construction, a tail wheel which is supported on a swingable arm carried by the rollover frame. However, it has been the conventional practice to utilize stops for limiting the pivotal movement of the swingable arm so that the limit positions of the arm are above and below the horizontal plane of the rollover frame, and when the tail wheel is being utilized to adjust the plowing depth, this arm is inclined upwardly so that the axis of rotation of the tail wheel will be positioned above the rollover frame. With this construction, an extremely large diameter wheel is necessary, which becomes very bulky and heavy.

Moreover, in the conventional arrangement, when the plow is shifted from one side to the other, this pivoted arm and attached tail wheel are free to move under gravitational forces from one stop to the other, and as a result extremely high impact forces result, and the arm tail wheel terminate their movement with a banging action of such force that the associated parts may become damaged over a period of time, and extremely large parts are necessitated to withstand such forces.

With the foregoing in mind, the present invention contemplates a unique mounting for the tail wheel in which the supporting arm, during periods of use, projects below the rollover frame, thus permitting utilization of smaller tail wheels, and permitting material reduction in weight of the equipment.

A further object is to provide a tail wheel construction which embodies a unique means for controlling the swinging movement of the tail wheel, when shifting the plows from one side of the other.

Still another object is to provide novel means by which the tail wheel may be adjusted to regulate the plowing depth.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations thereon.

Referring to the accompanying drawings, which are for illustrative purposes only:

Fig. 1 is an elevational side view of a two-way plow embodying a tail wheel construction according to the present invention;

Fig. 2 is a fragmentary sectional view, taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a rear end view showing details of the tail wheel controlling and shifting means, and with the tail wheel shown in a plowing depth regulating position; and

Figs. 4 and 5 are views showing the operation of the tail wheel shifting mechanism for shifting the tail wheel during change of plow bottoms from one side to the opposite side.

Referring more specifically to the drawings, for illustrative purposes, the present invention is disclosed as being applied to a two-way plow construction which incorporates a supporting frame 10 which is associated with a draft mechanism (not shown) which also provides for tiltably raising the support frame so as to move the plow bottoms into the air and permit transportion of the plow from one point to another. The draft mechanism also usually incorporates suitable means for actuating a rollover frame which in this instance is indicated as comprising a tubular structure 11 in concentric relation to the support frame 10, and which usually is provided with laterally extending bracket members 12, or an equivalent structure suitable for supporting conventional standards such as indicated by numerals 13 and 14, respectively. These standards are arranged so as to project above the horizontal plane passing through the rollover frame 11, and are adapted to carry at their ends sets of oppositly disposed plow bottoms 15 and 16 which may be selectively brought into a position of use by rotating the rollover frame 11 so as to position the brackets 12 on one side or the other of the rollover frame.

As thus far described, the two-way plow may embody various constructions by which the two-way plow may be supported and arranged for shifting from one position of use to the other. In the present invention, and for purposes of illustrating its basic principles, the after end of the supporting frame 10 is provided with a fixed collar 17 against which the adjacent end of the rollover frame 11 abuts. A fabricated end structure 18 is supported on the projecting end of the support frame, this end structure comprising a mounting sleeve 19 to which there is welded or otherwise secured a crossbar 20 which extends above or generally on one side of a diameter of the sleeve with its ends diametrically opposed on opposite sides. The sleeve is secured to the associated end of the support frame 10 with the crossbar 20 substantially horizontal, by means of a pin 21, as shown in Fig. 3.

The crossbar 20 at each end carries a nut 22 which is secured as by welding or otherwise so that its threaded bore is slightly inclined for receiving an adjustable bolt 23, a lock nut 24 being provided to retain the bolt 23 in an adjusted position. The head of the bolt 23 forms an abutment, for a purpose to be subsequently described.

Between the ends of the crossbar 20, a depending arm 25 is secured at one end to the sleeve 19 so as to project downwardly at right angles to the crossbar 20. A rearwardly projecting pin 26 is supported at the outermost end of the arm 25, and will be discussed subsequently in connection with the control mechanism for moving the tail wheel during the change-over operation from one plow bottom to the other.

As shown in Figs. 1 and 2, a plate member 27 is secured at the outermost end of one of the brackets 12 by means of bolts 27'—27'. The plate 27 projects rearwardly of the rear bracket 12 and serves as a mounting for a spindle structure 28 upon which an arm 29 is pivotally mounted at one end for swinging movement. The outer end of the arm 29 carries an axle structure 30 upon which a tail wheel 31 is rotatably mounted.

Between the ends of the arm 29, a plate member 32 is secured as by welding or otherwise so as to project inwardly in such a manner that in the operative position of the tail wheel, the uppermost edge of the plate 32 will be adapted to abut the head of the adjacently positioned bolt 23, and thus limit upward swinging movement of the arm 29. By adjusting the bolt 23, the upper limit of movement may be varied, and it is this position of the tail wheel which is the normal operative position during plowing, and by the adjustment just described, the axle which rotatably supports the tail wheel may be

raised and lowered in order to regulate the plowing depth to the desired amount.

It will be observed that for the shallow plowing depths, the arm 29, which supports the tail wheel, extends obliquely downwardly from its pivoted end, so as to position the axle 30 well below the horizontal plane through the support frame 10. This enables utilization of a relatively small tail wheel, and permits a reduction in weight of the supporting structure therefor. However, for more extreme depths the axle 30 is readily positionable above the horizontal plane.

When the support frame 10 is lifted to raise the plow bottoms to a position for transportation or movement of the plow from one location to the other, or when changing the plow bottoms from one position to the other, the inherent weight of the tail wheel and arm 29 will cause the arm to swing downwardly until the lowermost edge of the plate member 32 strikes against the adjacent edge 33 of the plate 27, this position being shown in full lines in Fig. 1.

With the construction thus far described, actuation of the rollover frame to change plows will cause the tail wheel supporting structure to be carried in an arc below the support frame 10, and that during this movement the spindle 28 will pass through a position wherein the weight of the tail wheel will act to swing the arm 29 under gravitational force through an arc until the opposite edge of the plate 32 strikes the edge 33 of plate 27. Since this movement is unrestrained, the shifting movement will be terminated with a sharp impact blow of such intensity that over a long period of time, these impacts will result in undesirable wear and possible breakdown of the supporting structure.

In accordance with the present invention, the shifting movement of the tail wheel structure during plow changeover is controlled in such a manner that these impact and undesirable blows are eliminated. For such purpose, an arm 34 is cooperatively supported in an angular position by the arm 29 and plate member 32. As shown in Fig. 2, the inner end of the arm 34, adjacent its securement to the adjacent plate member 32, is angularly deflected and formed into a fork 35 which is adapted to receive the pin 26 therein during the plow change-over operation and mechanically control and move the arm 29 from one position to the other.

This movement is more specifically illustrated and shown in Figs. 4 and 5 of the drawings. At the beginning of the change-over, the tail wheel will be in the position shown in dotted lines in Fig. 3, the lower edge of plate member 32 being in abutting relation with the adjacent edge 33 of the plate 27. As the rollover frame is moved, the pin 26 enters the fork 35 as shown in Fig. 4. It will be noted that at this time the arm 29 projects generally to the left. As the swinging movement of the rollover frame continues, the stationary pin 26 will act to mechanically swing the arm 29 to the position shown in Fig. 5, wherein the arm 29 projects to the right and the other edge of the plate member 32 is carried into abutting engagement with the adjacent edge 33 of the plate 27. It will thus be apparent that the swinging movement of tail wheel is thus controlled by the action of the 26 pin and fork 35, and the undesirable free movement under gravitational forces and resulting impact is prevented.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention, and, hence, I do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims.

I claim:

1. In a two-way plow: a fixed support frame, a plow carrying frame mounted on said support frame for swinging movements from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for unitary movement with said carrying frame, and relative swinging movement about the pivot of said arm; an abutment adjacent said pivot adapted to limit downward swinging movement of the arm on either side of the support frame; a cross-member carried by said support frame having ends positioned on opposite sides of the support frame; adjustable stops at the ends of said cross-member for respectively limiting and varying upward movement of the arm on each side of the support frame; a pin carried by said support frame positioned below said cross-member; a member carried by said arm having a forked outer end adapted to engage said pin and shift the arm from one position of engagement with said abutment to its other position of engagement with said abutment during change of the plow frame from one side to the other of said support frame.

2. In a two-way plow: a support frame; a plow carrying frame mounted on said support frame for swinging movements from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for movement with said plow carrying frame, and relative swinging movement in a substantially vertical plane on either side of said support frame; spaced first stops adjacent the pivot of said arm for respectively limiting the downward swinging movement of the arm on each side of the support frame; second stops carried by said support frame respectively adjustable to limit the upward movement of the arm on each side of the support frame; a projection carried by said arm having a forked end; a projection carried by said support frame in the line of movement of said fork and engageable thereby, upon changing the plow frame from one side to the other of the support frame, said fork and latter projection acting to shift said arm between said first stops during said changes of the plow frame.

3. In a two-way plow: a support frame; a plow carrying frame mounted on said support frame for swinging movements from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for movement with said plow carrying frame, and relative swinging movement in a substantially vertical plane on either side of said support frame; spaced first stops adjacent the pivot of said arm for respectively limiting the downward swinging movement of the arm on each side of the support frame; second stops carried by said support frame respectively adjustable to limit the upward movement of the arm on each side of the support frame; and means for controllably moving the arm from one of the said first stops to the other first stop during movement of the plow frame from said one side of the support frame to the other side thereof.

4. In a two-way plow: a support frame; a plow carrying frame mounted on said support frame for swinging movements from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for movement with said plow carrying frame, and relative swinging movement in a substantially vertical plane on either side of said support frame; means adjacent the pivot of said arm for respectively limiting the downward swinging movement of the arm on each side of the support frame; and adjustable means carried by said support frame for respectively limiting the upward movement of the arm on each side of the support frame.

5. In a two-way plow: a support frame, a plow carrying frame mounted on said support frame for swinging movements from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel for movement with said ploy carrying frame, and relative swinging movement in a substantially vertical plane on either side of said support frame; and adjustable stop means supported independently of said plow carrying frame for variably changing the upward limit of swing of said arm so as to vary the plowing depth.

6. In a two-way plow: a support frame; a plow frame mounted on said support frame for swinging movement from one side to the other thereof; a tail wheel; an arm

pivotally supporting said tail wheel on said plow frame for swinging movements; stops limiting said arm movements, when the tail wheel is positioned on either side of the support frame, to a path positioned generally below a horizontal plane passing through said support frame, one of said stops being carried by said plow frame, and the other by said support frame; and means for adjusting the latter of said stops to vary the upward swinging limit of the arm and determine the plowing depth.

7. In a two-way plow: a support frame; a plow frame mounted on said support frame for swinging movement from one side to the other thereof; a tail wheel; an arm pivotally supporting said tail wheel on said plow frame for swinging movements; and stops limiting said arm movements, when the tail wheel is positioned on either side of the support frame, to a path positioned generally below a horizontal plane passing through said support frame, one of said stops being carried by said support frame, and the other by said plow frame.

8. In a two-way plow: a support frame; a rollover frame carried by said support frame and adapted for swinging movement from one side to the other thereof to selectively present associated plow members for use; a depth gauge wheel carried by said rollover frame and movable therewith from an operating position on one side of the support frame to an operating position on the other side of the support frame; an axle rotatably supporting said wheel; mounting means connecting said axle with said rollover frame for relative movement therebetween in going from one operating position to the other; and means including an element carried by the support frame to cause said relative movement of said axle from one operating position to the other to be constrained such that undesirable free movement of said gauge wheel during swinging movement of said rollover frame is minimized.

9. In a two way plow, the combination of: a mobile frame including a rearwardly extending longitudinal beam, a carrier mounted to turn on said beam, ground-engaging plow means mounted upon the carrier for producing either a right-hand or a left-hand furrow, means for turning the carrier to either of two operative positions to form a right-hand furrow or a left-hand furrow, as desired, a swinging arm pivotally connected to said carrier, stop means limiting pivotal movement of the arm relative to the carrier in either direction, a tail wheel mounted on said swinging arm and adapted to roll upon unploughed ground in either operative position of said carrier, a stationary member fixed relative to the longitudinal beam, a pair of laterally spaced contact elements on said member, each of said elements engaging said wheel arm in one of the operative positions of the carrier to maintain the wheel axis below the pivotal axis of said arm.

10. In a two way plow, the combination of: a mobile frame including a rearwardly extending longitudinal beam, a carrier mounted to turn on said beam, ground-engaging plow means mounted upon the carrier for producing either a right-hand furrow or a left-hand furrow, means for turning the carrier to either of two operative positions to form a right-hand furrow or a left-hand furrow, as desired, a swinging arm pivotally connected to said carrier, stop means limiting pivotal movement of the arm relative to the carrier in either direction, a tail wheel mounted on said swinging arm and adapted to roll upon unploughed ground in either operative position of said carrier, a stationary bracket fixed relative to the longitudinal beam near the rear end thereof, a pair of laterally spaced contact elements on said bracket, each of said elements engaging said wheel arm in one of the operative positions of the carrier to limit downward movement of the carrier.

11. In a two way plow, the combination of: a mobile frame including a rearwardly extending longitudinal beam, a carrier mounted to turn on said beam, ground-engaging plow means mounted upon the carrier for producing either a right-hand furrow or a left-hand furrow, means for turning the carrier to either of two operative positions to form a right-hand furrow or a left-hand furrow, as desired, a swinging arm pivotally connected to said carrier, stop means limiting pivotal movement of the arm relative to the carrier in either direction, a tail wheel mounted on said swinging arm and adapted to roll upon unploughed ground in either operative position of said carrier, a stationary bracket fixed relative to the longitudinal beam near the rear end thereof, a pair of laterally spaced contact elements on said bracket, each of said elements engaging said wheel arm at a location forwardly from the wheel axis in one of the operative positions of the carrier to limit downward movement of the carrier.

12. In a two way plow, the combination of: a mobile frame including a rearwardly extending longitudinal beam, a carrier mounted to turn on said beam and being provided with a right-hand plow and a left-hand plow, means for turning the carrier to either of two operative positions to bring either plow into ground-engaging relation, a swinging arm pivotally connected to said carrier, stop means limiting pivotal movement of the arm relative to the carrier in either direction, a tail wheel mounted on said swinging arm and adapted to roll upon unploughed ground in either operative position of said carrier, a stationary bracket fixed relative to the longitudinal beam near the rear end thereof, a pair of laterally spaced contact elements each adjustably fixed on said bracket, each of said elements engaging said wheel arm in one of the operative positions of the carrier to limit downward movement of the carrier and maintain the wheel axis below the axis of the longitudinal beam, said elements each being adjustable in a direction to vary the extent of movement of said swinging arm.

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